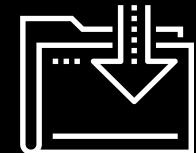


Introduction to UX/Bootstrap

Skills Bootcamp in Front-End Web Development
Lesson 3.1





WELCOME

Today's Objectives

By the end of class today, you will:

-  Articulate the steps in the design-thinking process.
-  Analyze user funnels on github.com to better understand how to design sections.
-  Link Bootstrap 4 to an HTML page through your first content delivery network (CDN).
-  Explain how Bootstrap 4 CDNs save developers time during the web development process.
-  Code an HTML/CSS webpage using Bootstrap 4 components.



What is UX?



UX design is a process
design teams use to build
products and services that
people love to use.

UX is...



How people feel when they use a product or service.



Associated with every human-object interaction.



Focused on the relationship between people, computers, and software products.

UX Designers Think About the Why, What, and How

As a UX designer, you will consider the why, what, and how of product use.

Why

User motivations,
user values, and
user feelings

What

Form factor, product
motivations, business
values, and product
materials

How

Design process, user
testing, product scope,
return on investment (ROI),
and key performance
indicators (KPIs)



Why does UX matter?

Good UX Is Good for Business

Research shows that,
on average, every dollar
invested in UX
brings \$100 in return—
an ROI of 9,900%!



UX Is Not UI Design

UX designers are typically seen as interface or visual designers.

That is a poor understanding.

A UX designer is concerned with the entirety of a product:

- Branding
- Design
- Usability
- Functionality



UX Design Is Centered Around Humans

Whatever you design, think of the people who'll use your website, product, or service. Those people are not abstract "users." They are real human beings who'll interact with your product. Keep in mind that your product is just a tool that helps them reach their goal.



Questions?



Collaboration in UX

Design Is a Team Sport

As teams and products grow in complexity, designers are valued because of their collaboration and team-building skills, rather than individual tasks.



Design Is a Team Sport

Today, being a designer means bringing the team together, checking all egos at the door, and helping to create a safe space for collaboration.



There Are Many Roles on UX Teams

Part of your challenge during this boot camp is to identify where your passion lies. The UX field is vast, and many specializations occur in the field.

UX/Product



Product manager

Responsible for the product planning and execution throughout the product life cycle



User researcher

Responsible for all aspects of research, including usability testing



UX designer

Measure and optimize applications to improve ease of use (usability), and create the best user experience

UI/Design



Visual/UI designer

Ensure that the finished product will conform to the overall vision created by UX designers



Interaction designer

Determine customer goals and define the product interactions necessary to achieve them



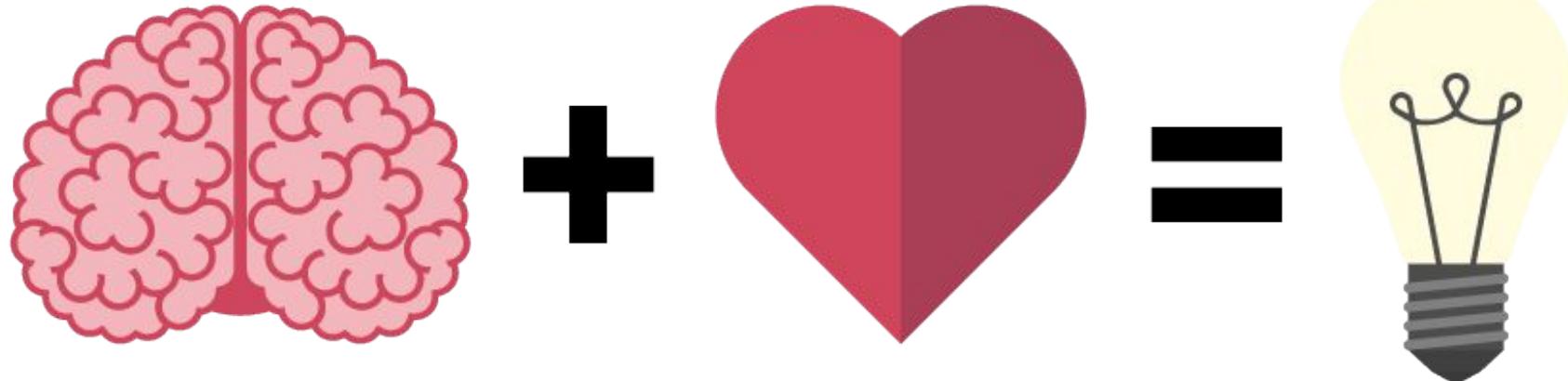
RWD prototyping

Develop interaction models, sitemaps, wireframes, prototypes, screen flows, and storyboards

Emotional Intelligence Is a Must-Have Skill for Designers

UX design is about examining and coordinating business needs, user needs, and resources to get the best possible solution.

To do well in UX, we need to empathize with everyone involved.



Hard and Soft Skills

You will learn the necessary skills to be effective UX/UI designers, including:

HARD SKILLS

Design thinking

User research

Interaction design

Visual design

Information architecture

UI design

Responsive web design (RWD)

Front-end web design

SOFT SKILLS

Communication

Critique

Flexibility

Collaboration

Emotional intelligence





What is your favorite app?



Activity: What Is Your Favorite App?

Suggested Time:

10 minutes

Four Levels of UX

There are four main factors designers use to evaluate apps:

Utility

The purpose of the app

Usability

Define why it is valuable

Look

What visual elements are inspiring

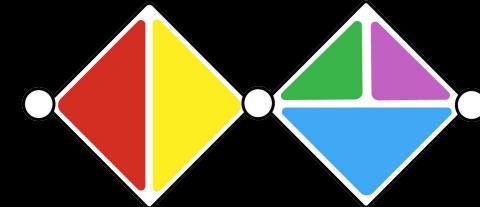
Feel

How the brand makes you feel

Design Thinking



Design Thinking Overview



WHAT

The design-thinking process is iterative, flexible, and focused on collaboration between designers and users.

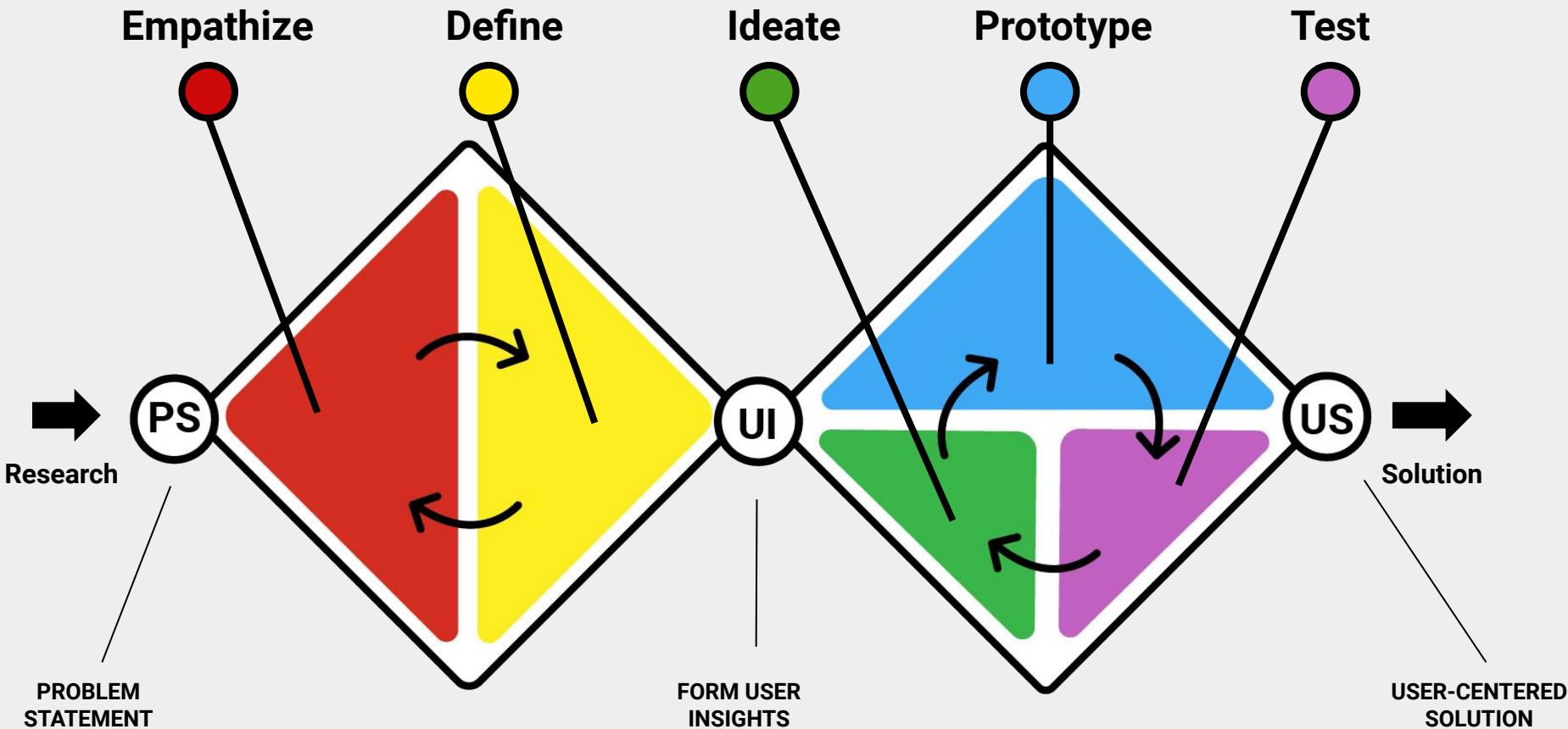
WHEN

- In the “real world,” the design-thinking process is nonlinear.
- Each project can differ greatly. Therefore, the process requires constant tailoring for each project. Being able to customize your process requires confidence that only comes from experience and practice.
- Use the design-thinking process when you want to create a new product or service or improve a product or service that already exists.

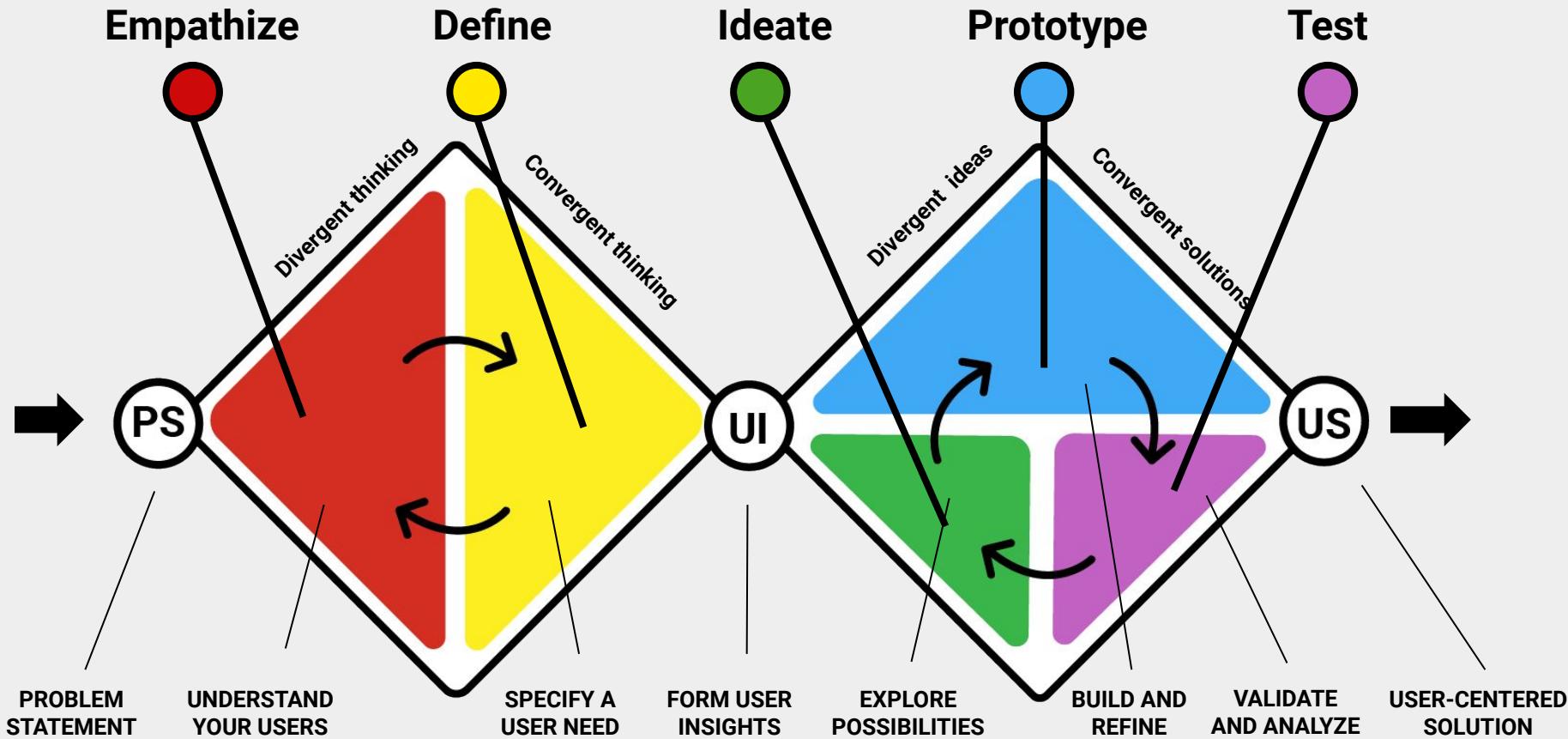
WHY

- To create designs that are relevant to your users.
- To create designs that are easy and enjoyable to use.
- To understand the return on investment of your UX design.

The Design Thinking Process has 5 main steps:



Design Thinking Is a Five-Step Problem-Solving Process

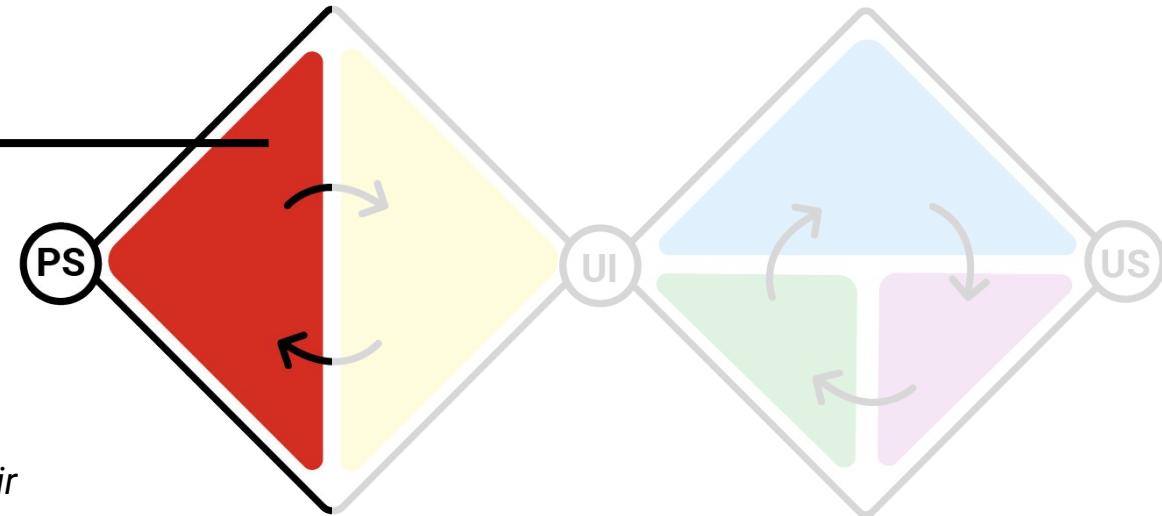


1. Empathize Phase

The first phase of the design-thinking process exists to gain an empathic understanding of the problem you're trying to solve.

Empathize tips

- Learn about the users.
- Learn about the company.
- Learn about the competition.



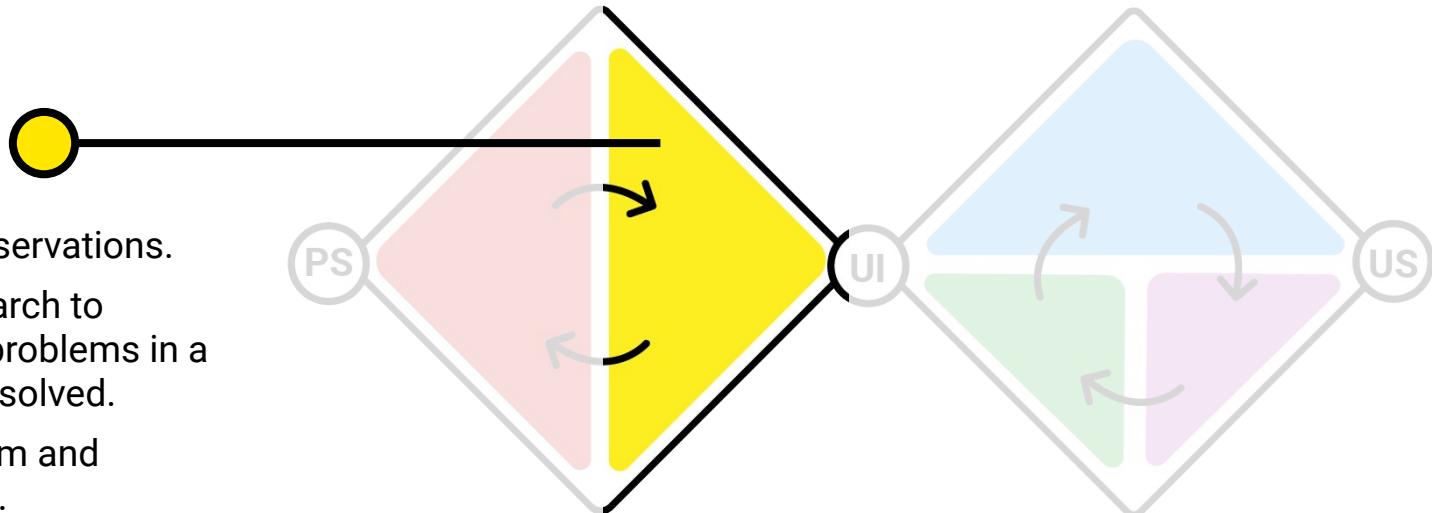
The key is to feel what users feel—their pains and frustrations.

2. Define Phase

In the define phase, you put together the research you have created and gathered during the empathize phase.

Define tips

- Analyze your observations.
- Synthesize research to define the core problems in a way that can be solved.
- Identify a problem and user to focus on.

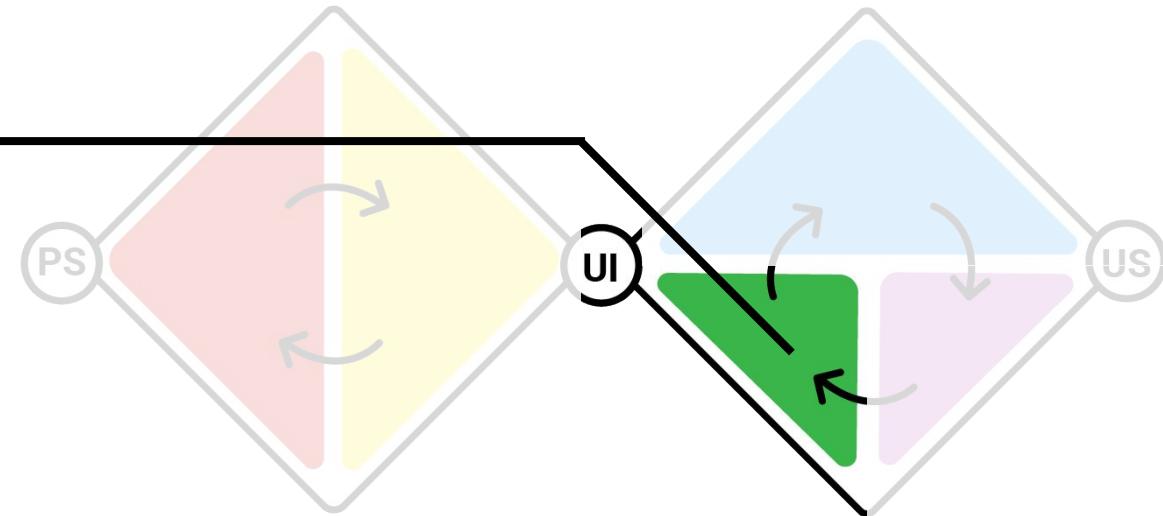


3. Ideate Phase

In the third phase of the design-thinking process, designers are ready to start generating ideas.

Ideate tips

- Brainstorm.
- Sketch.
- Use a lot of sticky notes.



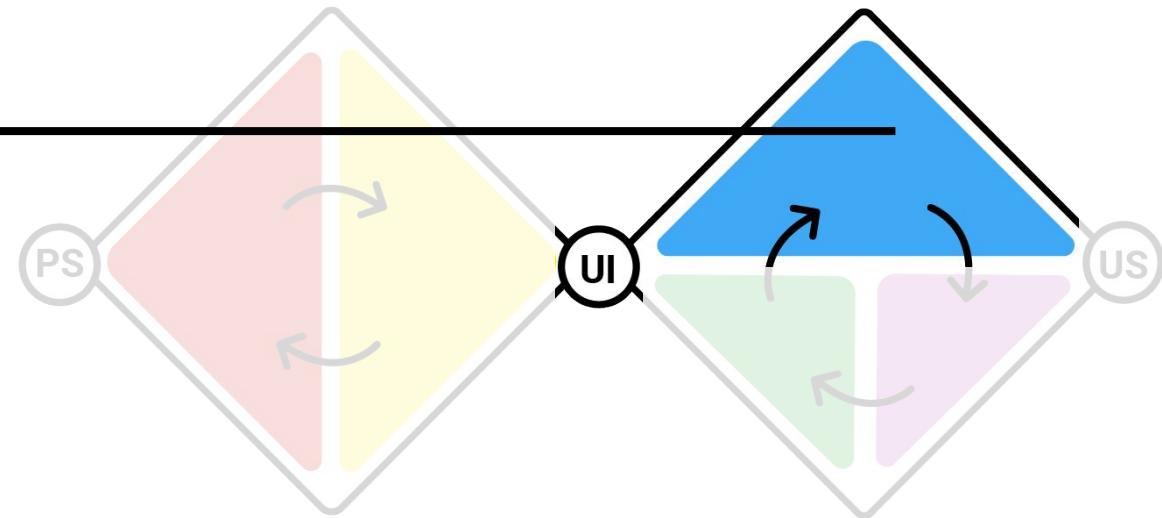
4. Prototype Phase

Build prototypes for the proposed solution!

Different methods are involved, such as sketching and prototyping.

Prototype tips

- Make user flows.
- Sketch paper prototypes.
- Build high-fidelity prototypes.

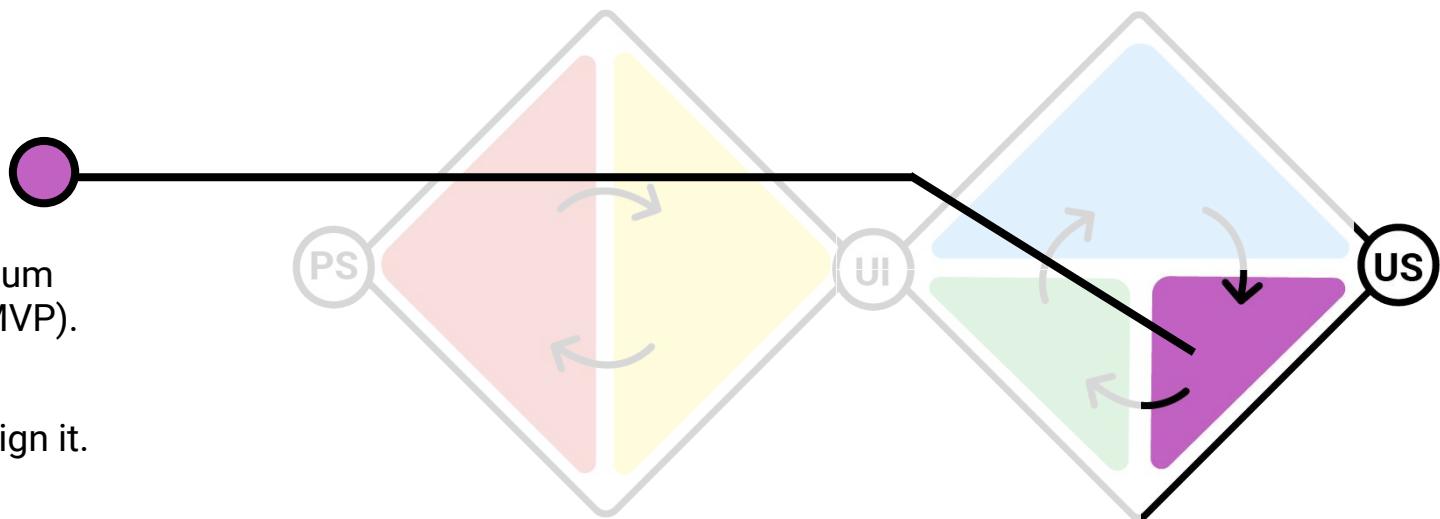


5. Test Phase

Test your prototype until a viable product/service is created.
The test phase is iterative.

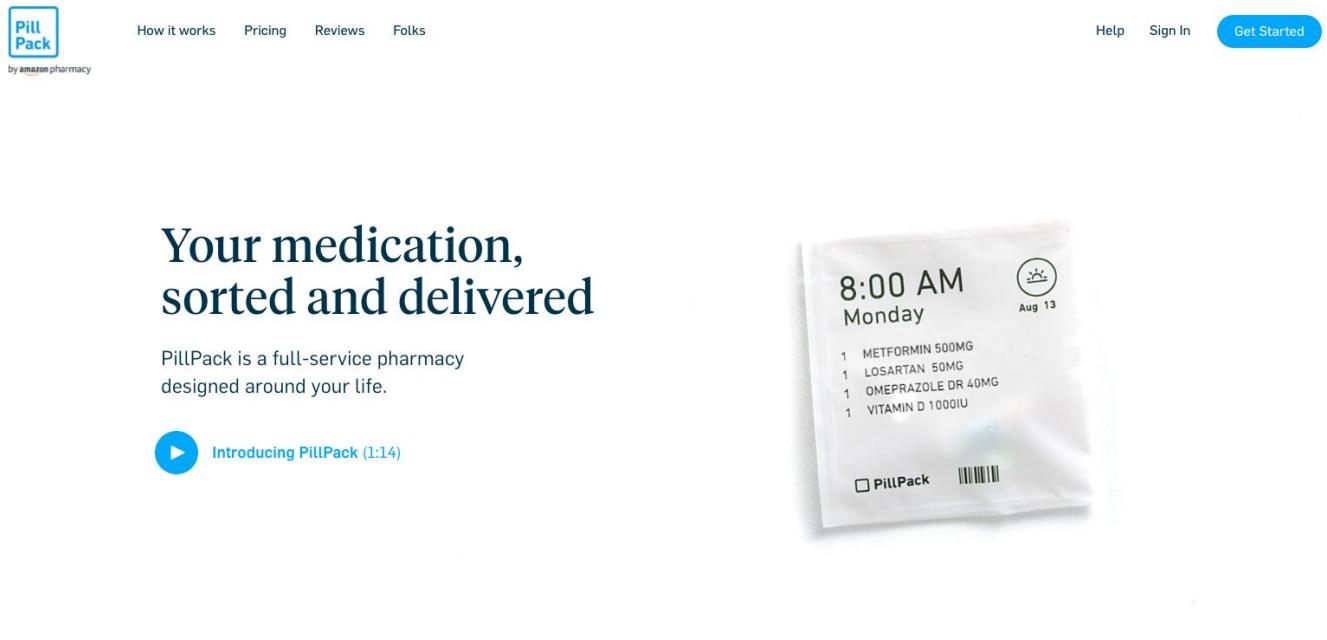
Test tips:

- Produce a minimum viable product (MVP).
- Test it.
- Iterate and redesign it.
- Test it again.



Case Study: Using Design Thinking To Disrupt Medicine

[PillPack.com](https://pillpack.com) is an online pharmacy that used the human-centered design-thinking process to challenge how people receive and consume their medicine.

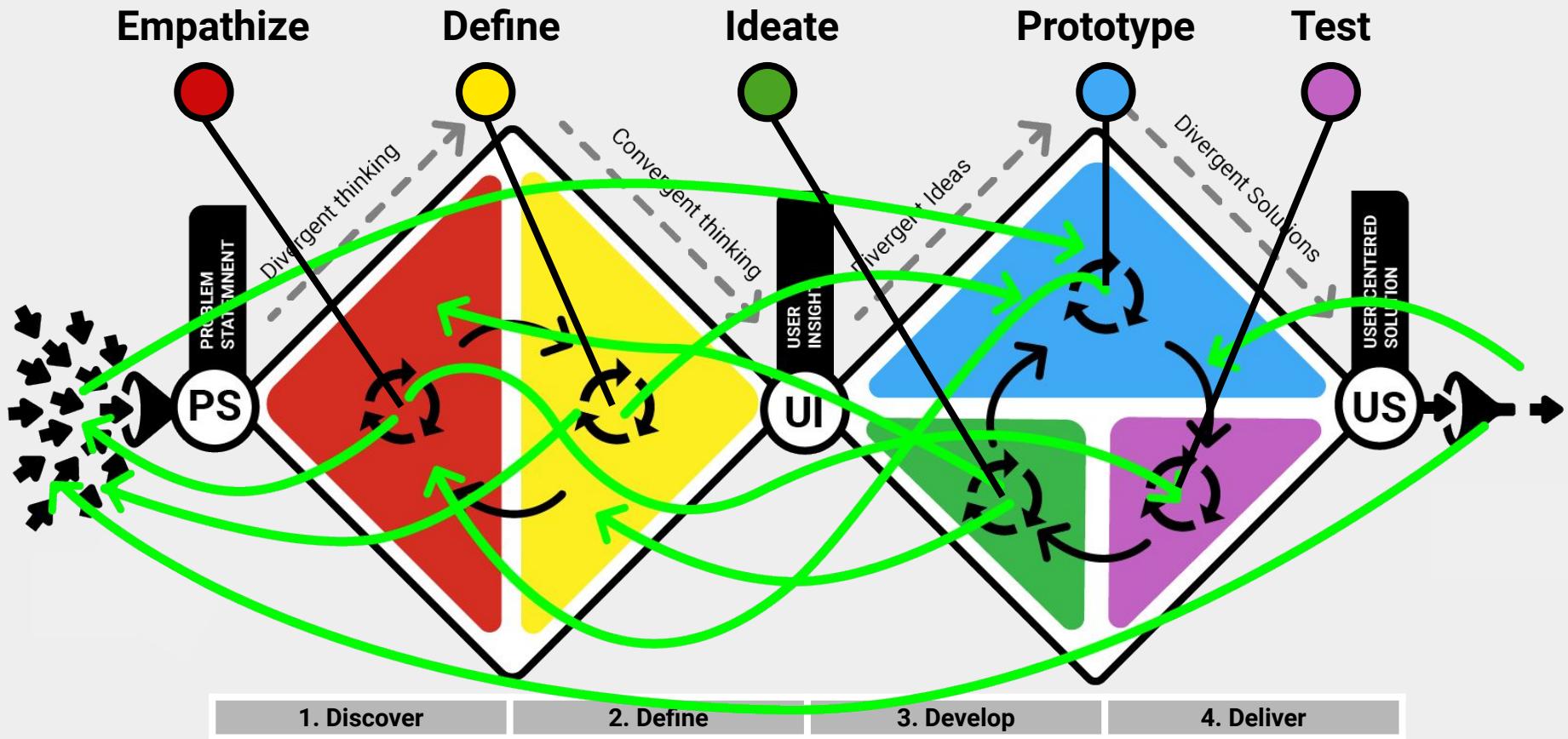


The screenshot shows the PillPack website homepage. At the top, there's a navigation bar with links for "How it works", "Pricing", "Reviews", "Folks", "Help", "Sign In", and a "Get Started" button. Below the navigation, a large headline reads "Your medication, sorted and delivered". A subtext below it says "PillPack is a full-service pharmacy designed around your life." To the right of the text is an image of a white, zip-top medication delivery bag. The bag has printed text: "8:00 AM", "Monday", "Aug 13", "METFORMIN 500MG", "LOSARTAN 50MG", "OMEPRAZOLE DR 40MG", "VITAMIN D 1000IU", and the "PillPack" logo. A play button icon and the text "Introducing PillPack (1:14)" are located at the bottom left of the page.

Time magazine named PillPack one of the best inventions of 2014, and Amazon bought it for \$1 billion in 2018.

Much of PillPack's success can be credited to its design-thinking approach.

Design Thinking Is NOT LINEAR

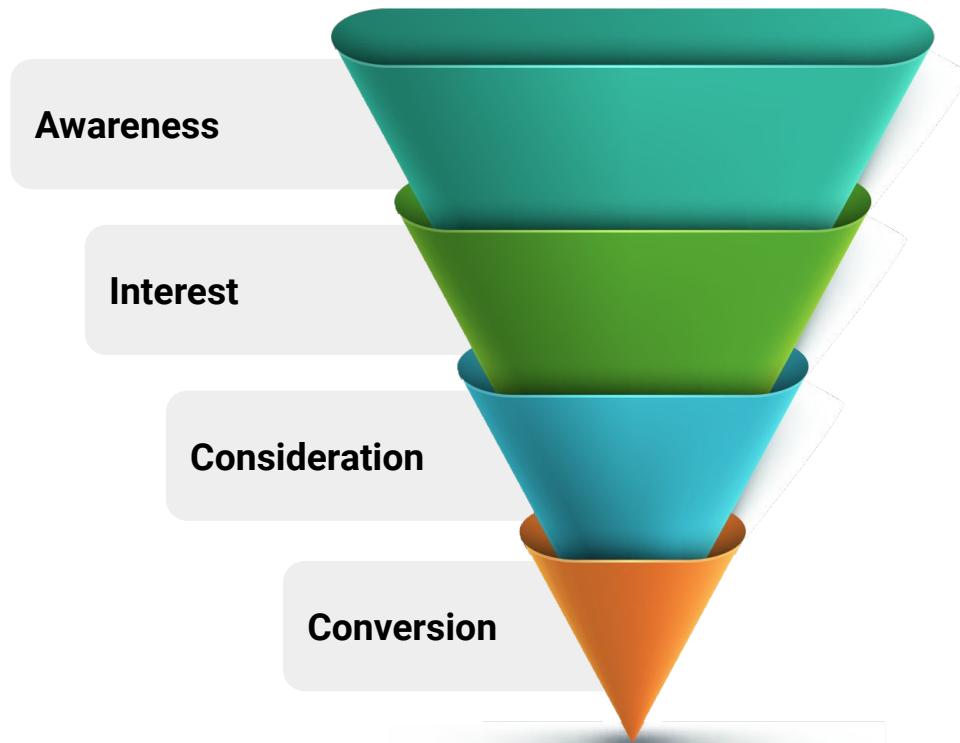




User Funnels and Value Propositions on the Web

What Is a User Funnel?

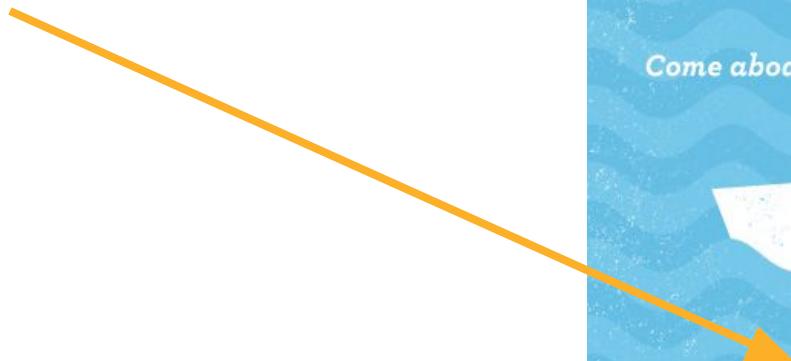
A **user funnel**, also known as a sales or marketing funnel, describes the process you create to attract potential buyers to your website and guide them to take some desired action.



What Is a Call to Action (CTA)?

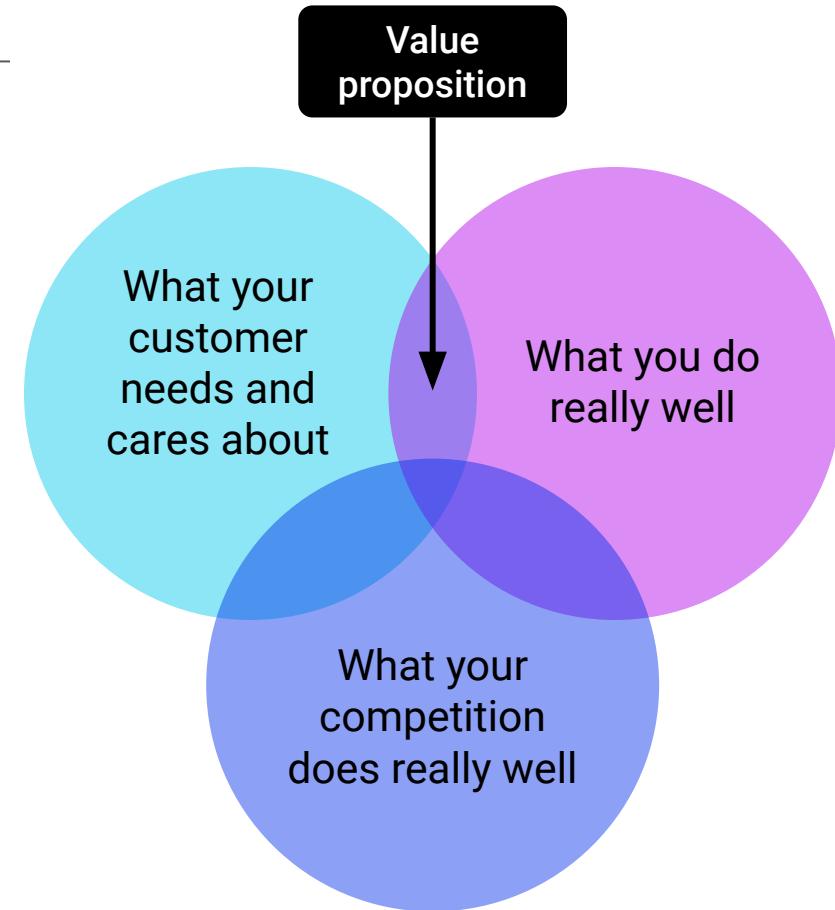
A **CTA** is a statement designed to prompt an immediate action associated with interacting with a UI.

An example of a CTA is a “Shop Now” button with text and images enticing the user to perform the desired action.



What Is a Value Proposition?

A **value proposition** is essentially advertising a feature of your business.





Value propositions are an
innovation, **service**, or **feature**
intended to make a company or
product **attractive** to customers.

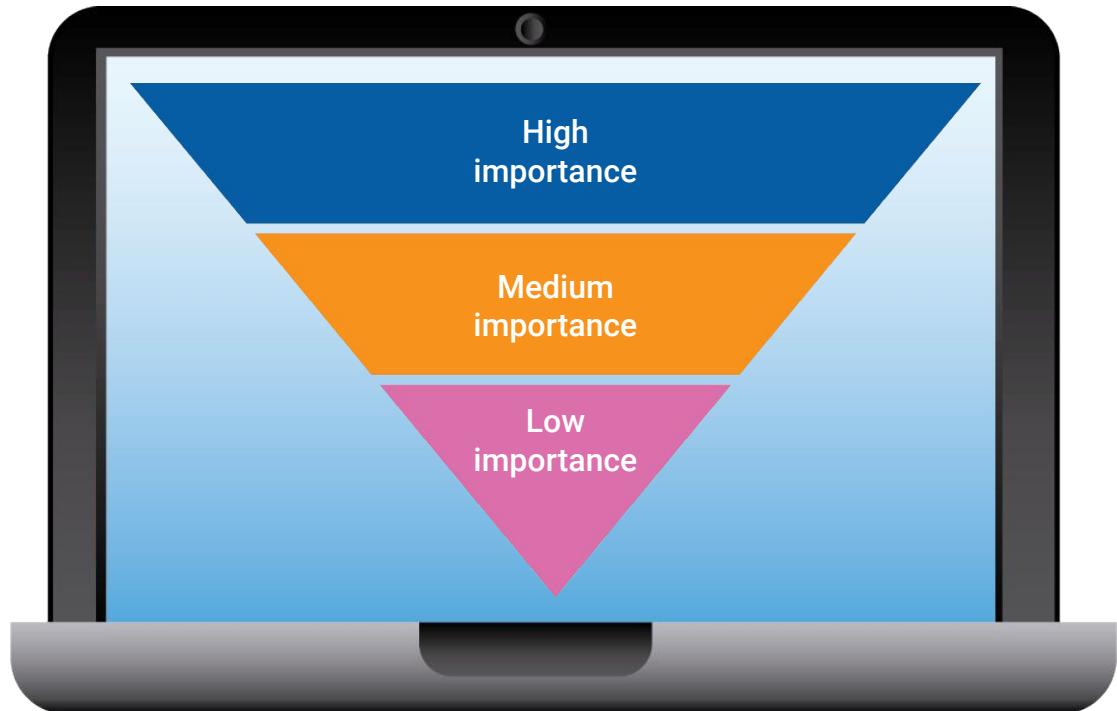


**Value propositions on the web
are laid out purposefully in
user funnels.**

User Funnels on the Web

Modern websites have a very defined “flow” to how their webpages are built.

- Sections are designed to advertise one important CTA.
- They’re designed to catch users’ attention as they scroll down through the page.
- Sections will be ordered from the most important CTA to the least important.



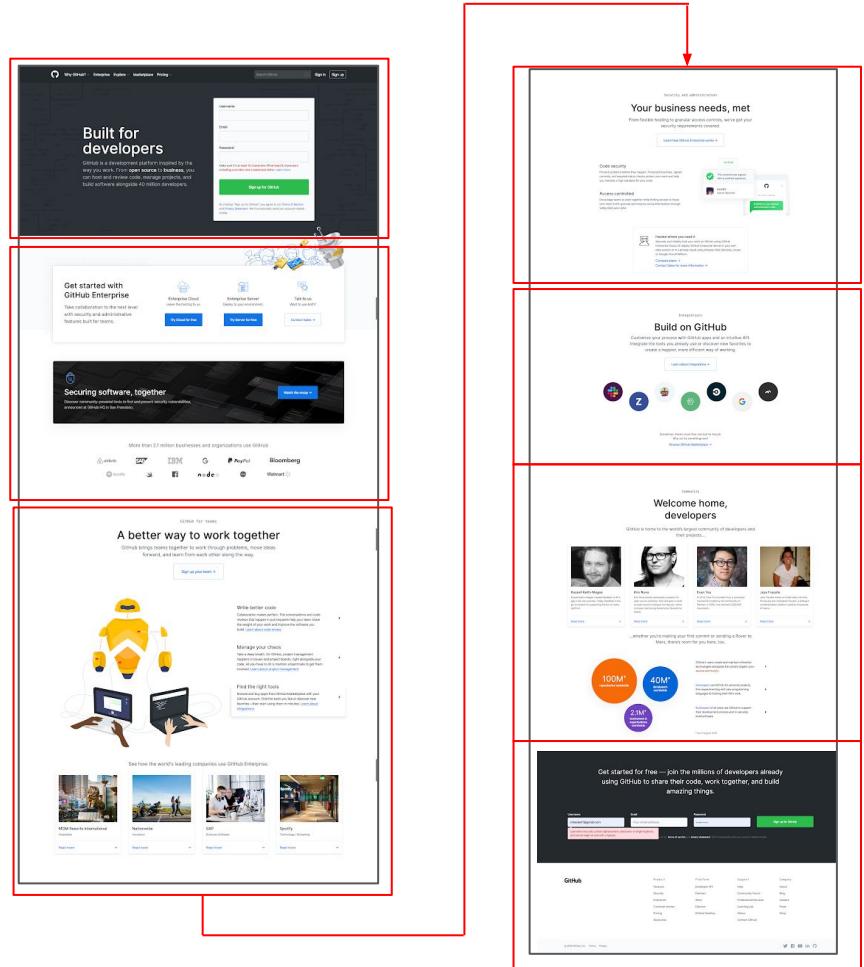


Businesses have many different types of users. It's important to tailor CTAs on your homepage to generate the most interest in your user base.

User Funnels on the Web

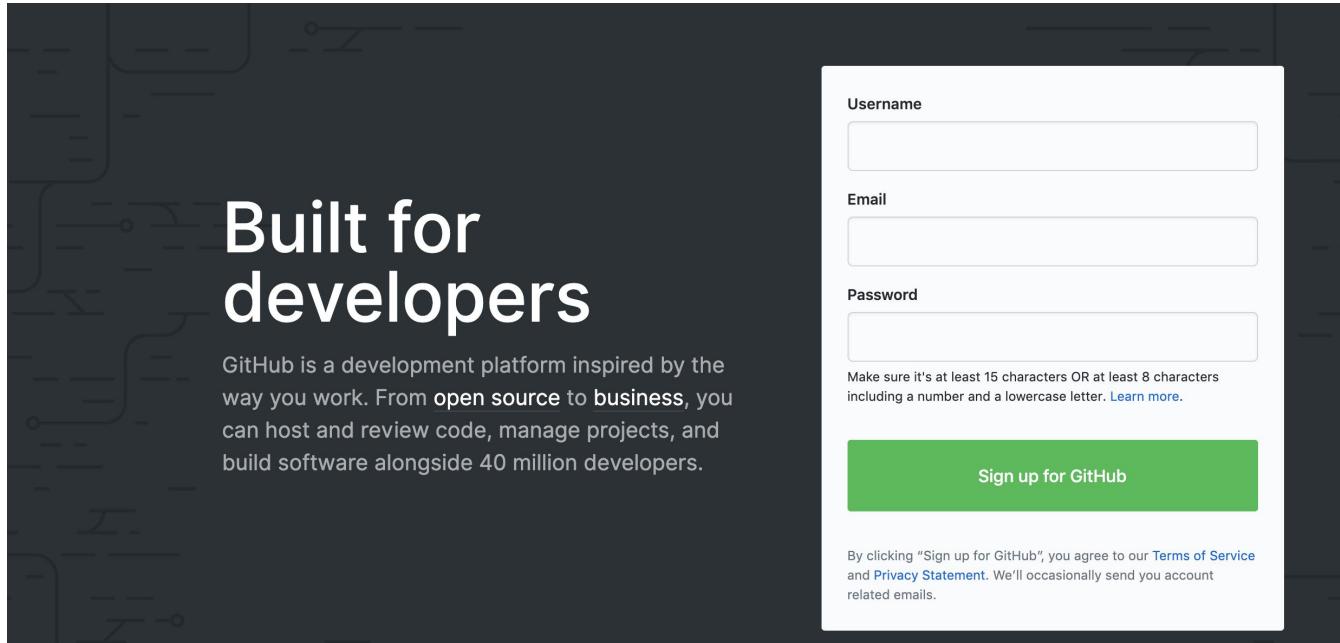
Websites are laid out very specifically on the web. All websites will direct you toward their CTAs and value propositions.

Let's walk through the github.com front page and see how they continually try to hook the user in each of the eight sections.



GitHub User Funnel: Step 1—Signup

First, GitHub prompts its users to sign up. Converting new users to use the service is priority number 1 for GitHub. We'll see them attempt to do this throughout the design.



GitHub User Funnel: Step 2—GitHub Enterprise

Second, GitHub advertises one of its features—GitHub Enterprise. They then prompt you to contact their sales team.

The screenshot shows a landing page for GitHub Enterprise. At the top, the title "Get started with GitHub Enterprise" is displayed above a subtitle: "Take collaboration to the next level with security and administrative features built for businesses." Below this is a blue "Contact Sales" button. Further down, there is a link "Or start a free trial of Enterprise Server →". The background of the main section features a dark, abstract design of interconnected nodes and lines, resembling a circuit board or network diagram. Overlaid on this background is a smaller, semi-transparent rectangular box containing promotional text for GitHub Actions. This box has the heading "Introducing GitHub Actions with CI/CD", followed by the subtext "Automate any workflow with GitHub Actions." and "See the latest updates announced at our HQ reveal." At the bottom of this box is another blue button labeled "Check it out →".

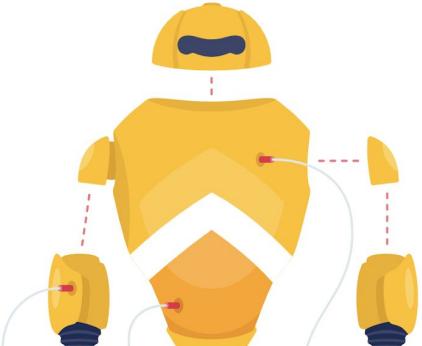
GitHub User Funnel: Step 3—GitHub Teams

Third, GitHub prompts their users to sign up for a team, for the visiting project managers and team leaders.

A better way to work together

GitHub brings teams together to work through problems, move ideas forward, and learn from each other along the way.

[Sign up your team →](#)



Write better code

Collaboration makes perfect. The conversations and code reviews that happen in pull requests help your team share the weight of your work and improve the software you build. [Learn about code review.](#)

Manage your chaos

Take a deep breath. On GitHub, project management happens in issues and project boards, right alongside your code. All you have to do is mention a teammate to get them involved. [Learn about project management.](#)

GitHub User Funnel: Step 4—Feature Deep Dive

Fourth, GitHub advertises a feature—GitHub Enterprise.

Security and administration

Your business needs, met

From flexible hosting to granular access controls, we've got your security requirements covered.

[Learn how GitHub Enterprise works →](#)

Code security

Prevent problems before they happen. Protected branches, signed commits, and required status checks protect your work and help you maintain a high standard for your code.

Access controlled

Encourage teams to work together while limiting access to those who need it with granular permissions and authentication

A screenshot of a GitHub Enterprise interface. At the top, a green box says "Verified". Below it, a commit message from "keni85" (Karen Beecher) dated "Fri, Oct 6, 11:00 AM" is shown. The commit message reads: "This commit was signed with a verified signature." A green button at the bottom right says "846532 is your GitHub authentication code".

GitHub User Funnel: Step 5—More Features

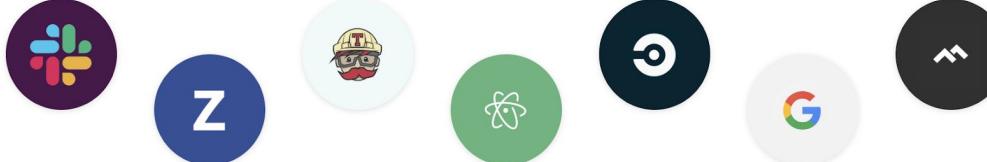
Fifth, GitHub advertises a GitHub Enterprise feature—integrations.

Integrations

Build on GitHub

Customize your process with GitHub apps and an intuitive API. Integrate the tools you already use or discover new favorites to create a happier, more efficient way of working.

[Learn about integrations →](#)



GitHub User Funnel: Step 6—Developers Who Use Us

Sixth, GitHub empathizes with its users by showing you other developers, their main user base.

Welcome home, developers

GitHub is home to the world's largest community of developers and their projects...



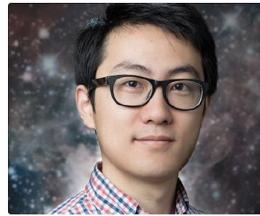
Russell Keith-Magee
Russell Keith-Magee created BeeWare to fill a gap in his own process. Today, BeeWare is the go-to project for supporting Python on every platform.

[Read more](#) →



Kris Nova
Kris Nova quickly developed a passion for open source software. Now she gets to work on open source tooling at her day job, which includes maintaining Kubernetes Operations (kops).

[Read more](#) →



Evan You
In 2013, Evan You founded Vue, a Javascript framework funded by the community on Patreon. In 2016, Vue reached 2,000,000 downloads.

[Read more](#) →

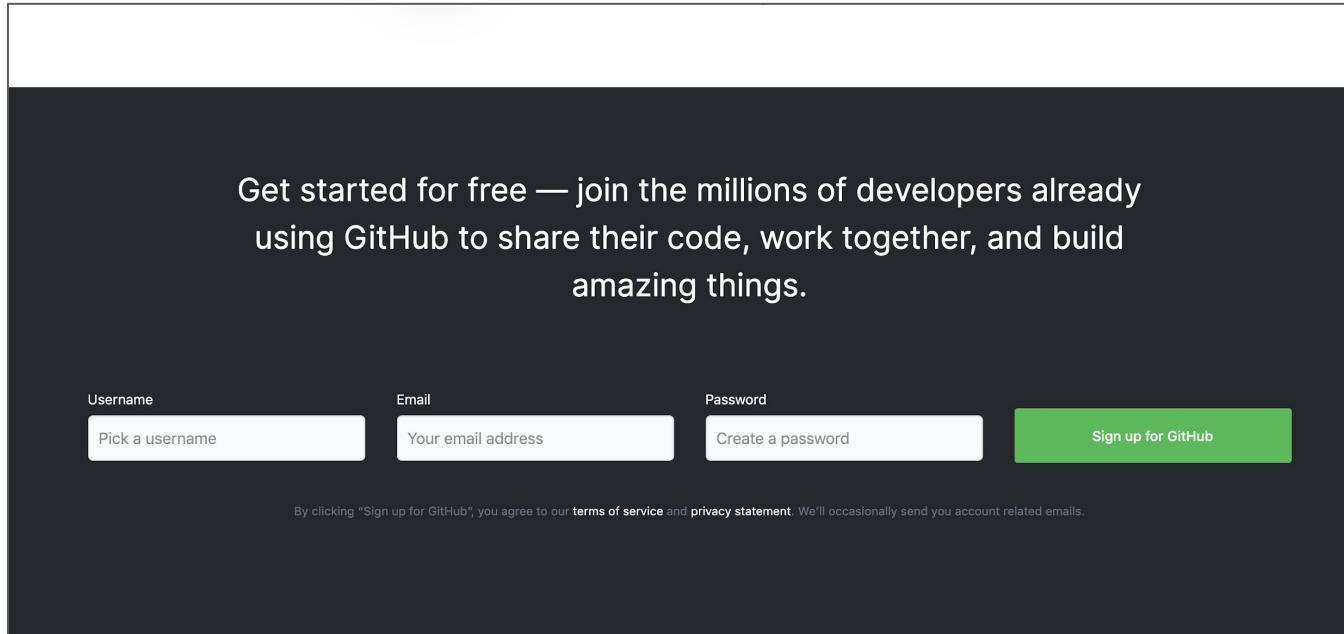


Jess Frazelle
Jess Frazelle works on Kubernetes full-time. Previously she maintained Docker, a software containerization platform used by thousands of teams.

[Read more](#) →

GitHub User Funnel: Step 7—Signup Again

Seventh, GitHub tries one final time to get potential users to sign up for GitHub by prompting those merely browsing to change their minds and join.



GitHub User Funnel: Step 8—Footer

Lastly, the user flow is capped off by the footer. Footers let users know that they are at the end of the website as well as help lost users find additional information.

GitHub	Product	Platform	Support	Company
	Features	Developer API	Help	About
	Security	Partners	Community Forum	Blog
	Enterprise	Atom	Training	Careers
	Customer stories	Electron	Status	Press
	Pricing	GitHub Desktop	Contact GitHub	Shop
	Resources			



**Each section has a purpose.
Keep this in mind when you move
onto developing your templates.**

Let's Review: GitHub User Funnel

01

Businesses will attempt to convert users on each section of a website.

02

Each section has a different feature they're highlighting, complete with a CTA.

03

You'll see the same CTA in multiple locations in an attempt to catch a user if they reach a decision at any point when exploring the UI.

04

Sections of websites will cater to different demographics.



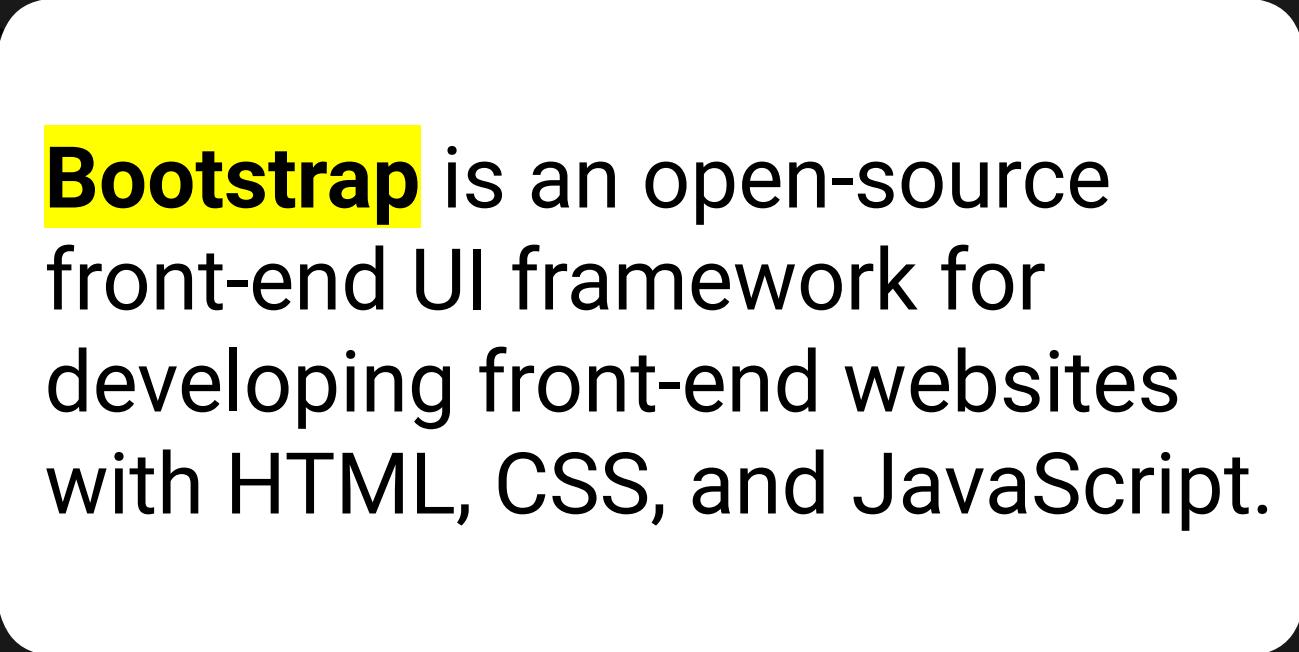
Introducing Bootstrap 4

Are you tired of writing all the code yourself?



A revelation. There is a better way!





Bootstrap is an open-source front-end UI framework for developing front-end websites with HTML, CSS, and JavaScript.

What Is Bootstrap?

Bootstrap can be used to quickly prototype ideas or build entire apps with Bootstrap's responsive grid system, prebuilt components, and plugins built on jQuery, allowing you to create fully responsive templates quickly.



Bootstrap is a free collection of tools for creating websites and web applications.



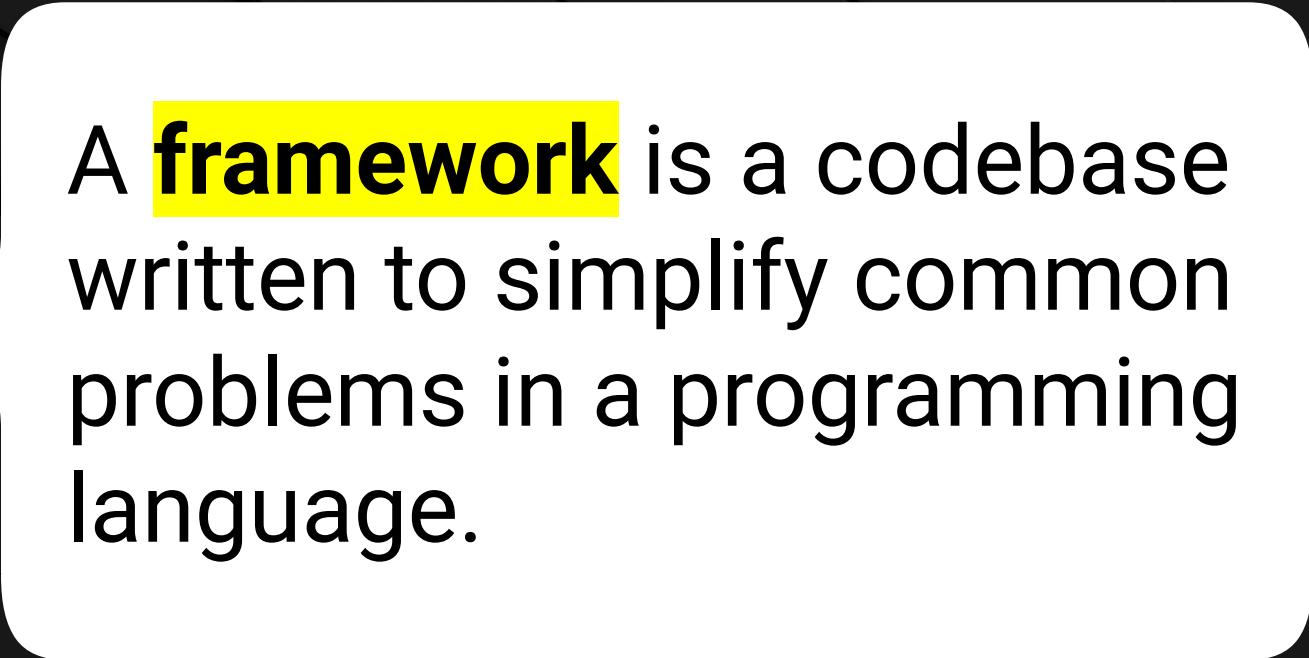
It comes with a prebuilt design template for typography, forms, buttons, navigation, UI elements, and JavaScript.



Bootstrap documentation: getbootstrap.com.



What's a framework?



A **framework** is a codebase written to simplify common problems in a programming language.

What's a Framework?

A framework can be compared to a collection of tools. If you were a carpenter, you would have a set of specialized tools used to speed your carpentry work.

A framework is the same—tools designed to solve a specific problem.



What's a Framework?

Software frameworks are written so that developers can focus on meeting deadlines, rather than recreating common system processes.

Why reinvent the wheel when the problem has already been solved multiple times by other developers?

Frameworks are hosted on **content delivery networks** (CDNs).



Using Frameworks: Pros and Cons

Pros

- Includes predefined classes and functions that can be used to design web applications.
- Streamlines the development process.



Cons

- Locks development teams into a codebase.
- Harder to customize/refactor code.

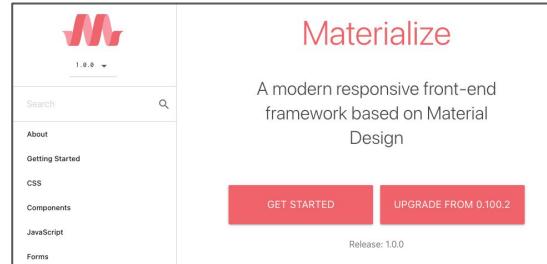


Front-End Frameworks

There are many types of front-end frameworks. Bootstrap is the most popular, which is why we teach it in this class.



getbootstrap.com



materializecss.com



semantic-ui.com



v0.material-ui.com



foundation.zurb.com



purecss.io



Why use Bootstrap 4?

Why Use Bootstrap 4?

Three reasons:

{ 01 }

World's most popular UI framework.

{ 02 }

Mobile-responsive by default.

{ 03 }

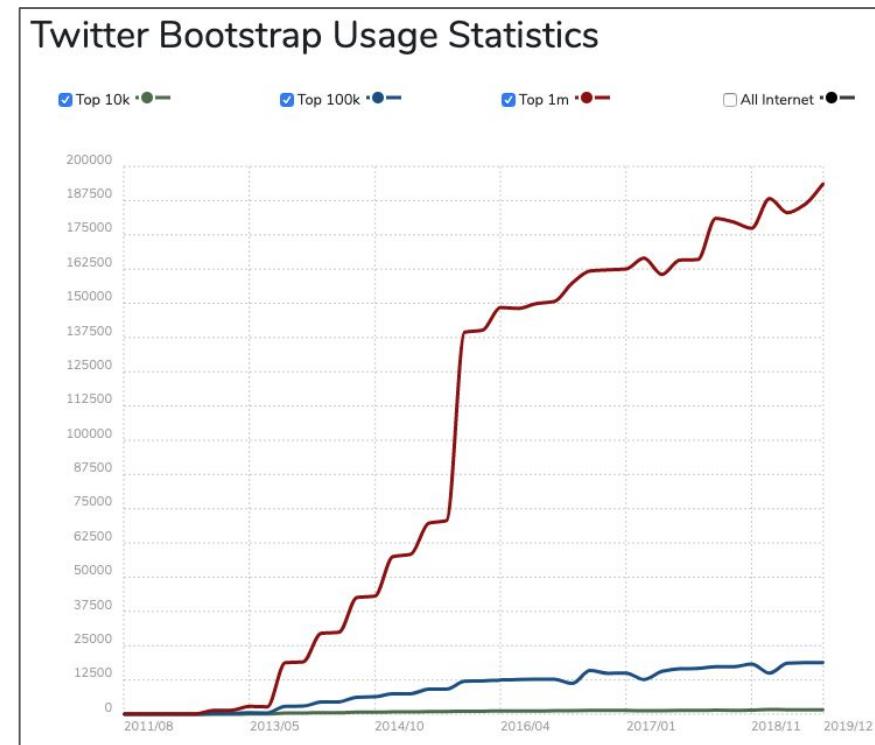
Many features and easy to use.

Why Use Bootstrap 4?

Reason 1: World's most popular UI framework.

Bootstrap 4 has been the most popular CSS framework on the web since its inception in 2011.

According to builtwith.com, Bootstrap 4 currently runs on about 20 million websites. But don't take our word for it—[see for yourself!](#)



Why Use Bootstrap 4?

Reason 2: Mobile responsiveness.

Bootstrap 4 is mobile-responsive by default with its custom columns system. This means that your website will automatically look great when viewed on screens ranging from monitors to tablets to phones.



Why Use Bootstrap 4?

Reason 3: Many features and easy to use.

Familiarize yourself with the UI features Bootstrap offers by reading the [Bootstrap 4 documentation](#).

Once Bootstrap is active, you can simply copy snippets from the documentation to save yourself the time it takes to create elements from scratch!

The screenshot shows the Bootstrap 4 documentation website. At the top, there's a purple header bar with the Bootstrap logo, navigation links for Home, Docs, Examples, Icons, Themes, and Blog, and social media links for GitHub, Twitter, and Download. Below the header is a search bar and a dropdown menu for 'Bootstrap v5.0'. The main content area has a sidebar on the left with sections like 'Getting started' (Introduction, Download, Contents, Browsers & devices, JavaScript, Build tools, Webpack, Accessibility, RFS, RTL), 'Customize' (Layout, Content, Forms, Components, Helpers, Utilities), and 'Tutorials' (Grid, Cards, Buttons, etc.). The main content area features an 'Introduction' section with a heading, a paragraph about getting started with Bootstrap, and a 'Quick start' section with a paragraph and a 'CSS' section below it. A sidebar on the right lists 'On this page' items such as Quick start, CSS, JS, Bundle, Separate, Modules, Components, Starter template, Important globals, HTML5 doctype, Responsive meta tag, Box-sizing, Reboot, and Community. A small advertisement for Carbon ads is visible in the middle-left area.

Bootstrap 4: Provides All the Tools We Need

Bootstrap 4 comes loaded with components **designed to be copied and pasted** into projects to quickly build prototypes.

The screenshot shows the Bootstrap 4 documentation website. The top navigation bar includes links for Home, Documentation, Examples, Themes, Expo, and Blog. On the right, there's a dropdown for v4.0, social media icons, and a 'Download' button. A search bar is at the top left. The left sidebar lists various components: Getting started, Layout, Content, Components, Alerts, Badge, Breadcrumb, Buttons, Button group, Card, Carousel, Collapse, Dropdowns, Forms, Input group, and Jumbotron. The main content area displays code snippets for different alert types:

```
<div class="alert alert-primary" role="alert">  
  This is a primary alert—check it out!  
</div>  
<div class="alert alert-secondary" role="alert">  
  This is a secondary alert—check it out!  
</div>  
<div class="alert alert-success" role="alert">  
  This is a success alert—check it out!  
</div>  
<div class="alert alert-danger" role="alert">  
  This is a danger alert—check it out!  
</div>  
<div class="alert alert-warning" role="alert">  
  This is a warning alert—check it out!  
</div>  
<div class="alert alert-info" role="alert">  
  This is a info alert—check it out!  
</div>  
<div class="alert alert-light" role="alert">  
  This is a light alert—check it out!  
</div>  
<div class="alert alert-dark" role="alert">  
  This is a dark alert—check it out!  
</div>
```

A yellow box highlights the 'Copy' button next to the code snippet. The right sidebar contains links for Examples, Link color, Additional content, Dismissing, JavaScript behavior, Triggers, Methods, and Events.

Primarily, we'll work with components today



Bootstrap 4 knowledge makes
you more employable.

Bootstrap 4 Skills Are in Demand

Bootstrap 4 dramatically reduces the time it takes for developers to create front-end interfaces.

Companies often request Bootstrap 4 for front-end development and UX positions.

AVANI
Avani Technology Solutions Inc ★★★★★ 7 reviews - Anaheim, CA

UX/UI Designer

Apply On Company Site 

Possess the Ability To:

- Accurately translate creative design comps into working web pages
- Prioritize, manage and complete multiple projects in a fast-paced, heavily regulated, deadline-driven environment
- Work effectively within a cross-departmental team
- Listen to customers (e.g. staff, etc.) to understand and respond positively to their requests
- Communicate effectively, both verbally and in writing, with all levels of staff and outside vendors
- Have exceptional initiative and follow-through on projects with minimal supervision and guidance

Experience & Education

- 3-5 years of professional experience as a UX/UI Designer or in a similar role
- Portfolio of previous and current UX/UI design projects
- Experience in testing websites with automated testing tools and assistive technology such as screen readers, screen magnifiers, and speech recognition software
- Strong project management skills
- Bachelor's degree in a related field, or equivalent

Knowledge of:

- Content management systems
- **HTML, CSS, Bootstrap, responsive design and mobile first principles**
- Website design practices, processes and technologies
- Most recent versions of Adobe Acrobat DC, Adobe Photoshop, Adobe Dreamweaver, Adobe Illustrator, Adobe InDesign, Adobe XD and Microsoft Office
- Website accessibility and Section 508 best practices, and remediation techniques
- Website testing and quality assurance best practices



What is a CDN?

What Is a CDN?

Bootstrap 4 (and frameworks in general) are hosted on a Content Delivery Network, or CDN (aka framework or library).

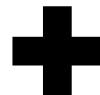
Many of today's most popular and powerful web technologies are frameworks built for developers by developers to speed their workflows.



CDNs are servers (or data centers) that publicly host files that contain code.

What Is a CDN?

Let's use your TV or smartphone as an analogy.



Your TV comes with standard programs (programming languages installed in your TV), but what if you want to add to the functionality of it?

You install other software on your TV to extend the functionality (e.g., Netflix).

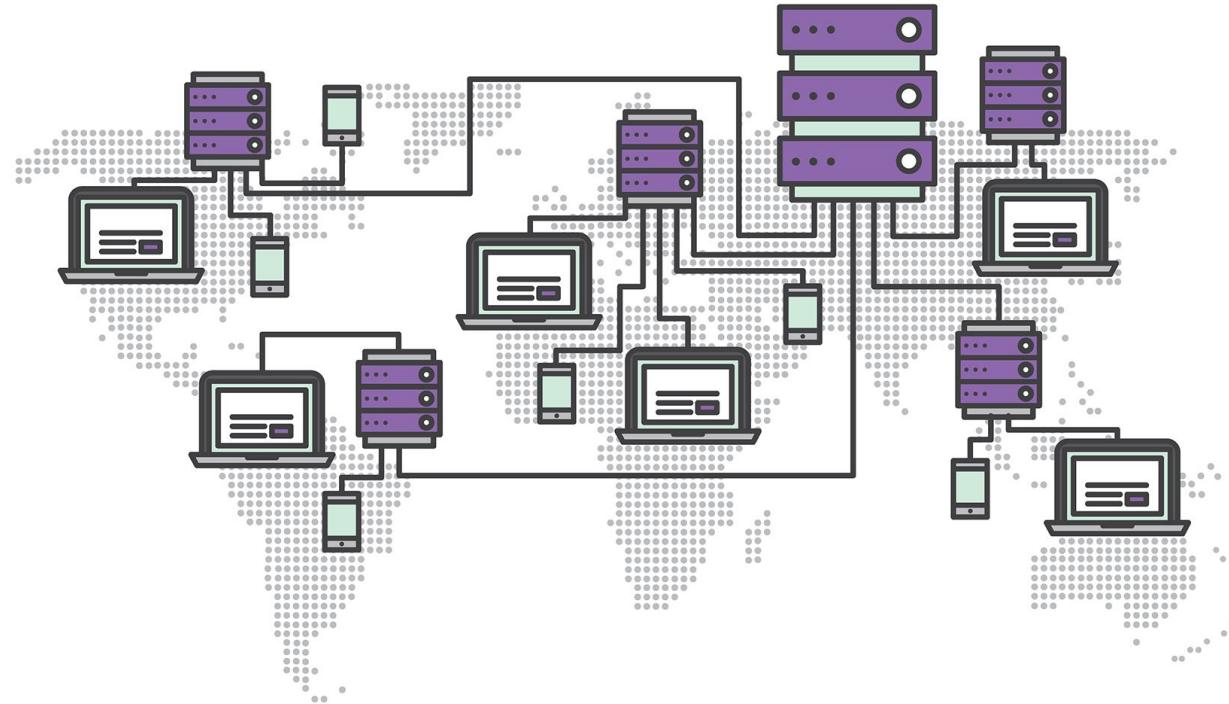
The same is true for CDNs—they serve content directly to your website over the internet.

You “install” a CDN by linking to it.

Why That's Helpful to Us

As long as your site is connected to the internet, you can import a CDN's code into your webpage without actually installing the framework into your working files.

The webpage doesn't have to worry about running slower due to having more stuff to load, and you don't have to manually update the code—the developers of the CDN do that for you.





Let's take a look at a file hosted
on Bootstrap 4's CDN:
[Bootstrap 4's CSS file.](#)



Instructor Demonstration

Bootstrap 4 Components



Activity: Getting Started With Bootstrap 4

In this activity, you'll be introduced to a CDN and use your first Bootstrap 4 component.

Suggested Time:

5 Minutes



Time's Up! Let's Review.

Let's Review: Bootstrap 4 Components



What does CDN stand for? What do CDNs do?



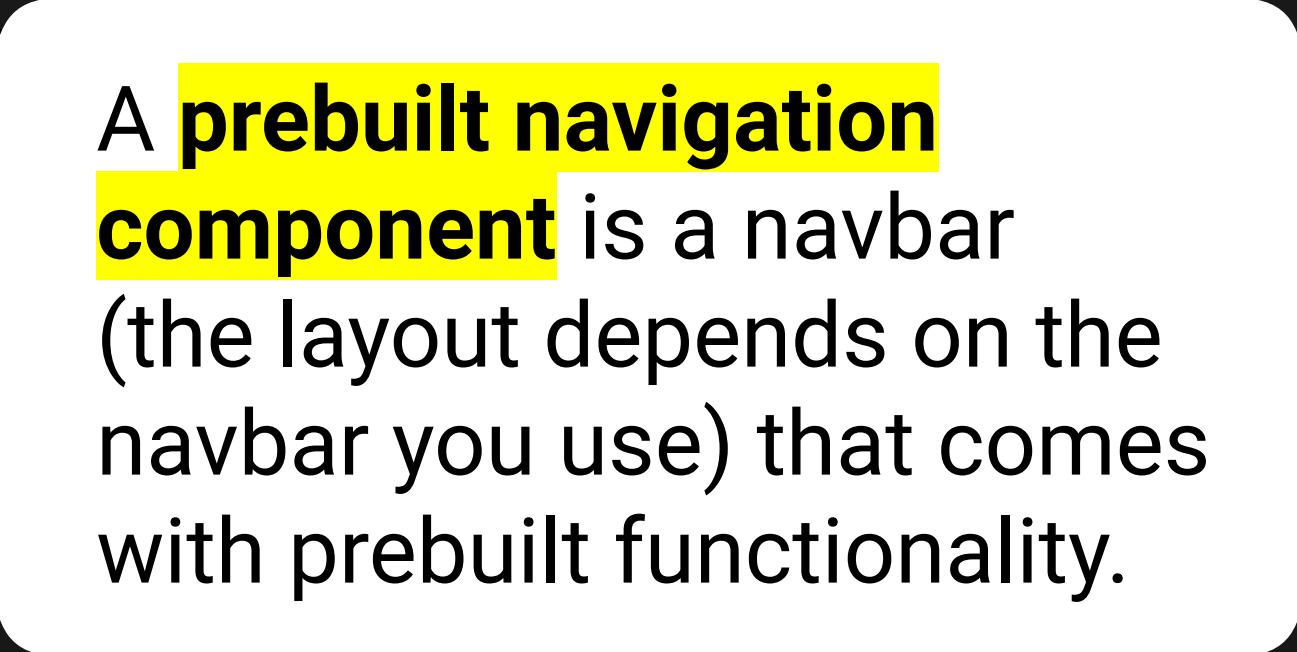
What is a Bootstrap 4 component?



Why is Bootstrap 4 useful?



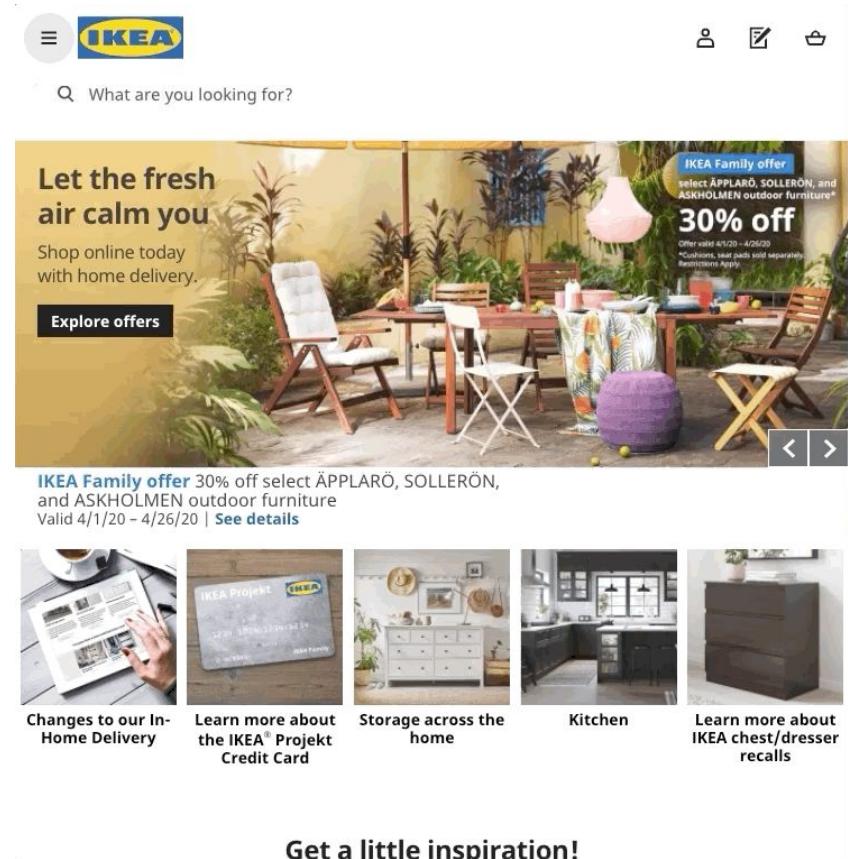
Bootstrap 4 Navigation Bars



A **prebuilt navigation component** is a navbar
(the layout depends on the navbar you use) that comes
with prebuilt functionality.

Bootstrap 4 Navbars

Navbars are essential; they are literally on every webpage in some way, shape, or form.



The screenshot shows the top navigation area of the IKEA website. It includes a grey header bar with the IKEA logo, a search bar with the placeholder "What are you looking for?", and user account icons. Below this is a main banner with a yellow gradient background and tropical foliage. The banner features the text "Let the fresh air calm you", "Shop online today with home delivery.", and a "Explore offers" button. To the right, there's a promotional section for "IKEA Family offer" with "30% off" select outdoor furniture. At the bottom of the banner, it says "Offer valid 4/1/20 - 4/26/20 *Conditions, seat pads sold separately. Restrictions Apply." Below the banner, there are five smaller cards with links: "Changes to our In-Home Delivery", "Learn more about the IKEA® Projekt Credit Card", "Storage across the home", "Kitchen", and "Learn more about IKEA chest/dresser recalls". A call-to-action button "Get a little inspiration!" is at the bottom.

Bootstrap 4 Navbars

On a shopping website, the navbar might have two or three main menus and more depth, with submenus, such as those on Ikea's website.

The screenshot shows the top navigation bar of the IKEA website. The bar includes links for Customer Service, IKEA Family, IKEA for Business, IKEA Planning Tools, Track My Order, Find a Location, and Credit Card. Below this is a secondary navigation bar with links for Deals, Products, and Rooms. The 'Rooms' link is highlighted with a blue box and an upward arrow, indicating it has a submenu. To the right of the 'Rooms' link are links for New at IKEA and Ideas & Inspiration. On the far right are icons for user profile, search, and cart. A large search bar below the navigation bar contains the placeholder text 'What are you looking for?'. To the left of the search bar, there is a promotional banner with the text 'We're different' and 'Celebrate life with an IKEA'.

Customer Service IKEA Family IKEA for Business IKEA Planning Tools Track My Order Find a Location Credit Card

IKEA Deals Products **Rooms ^** New at IKEA Ideas & Inspiration

What are you looking for?

Rooms

- Bedroom
- Living room
- Kitchen & appliances
- Home office
- Bathroom
- Baby room
- Kids room

We're different
Celebrate life with an IKEA

Learn more

A large image shows a man with a beard holding a baby. They are standing in front of a blue wall. To the right, there is a whiteboard with architectural blueprints and a small IKEA logo. The background is dark, and there are some plants on the right side.

Bootstrap 4 Navbars

On a personal website, the navigation may be a horizontal bar across the top of the page, showing Home, Shop, Blog, etc.

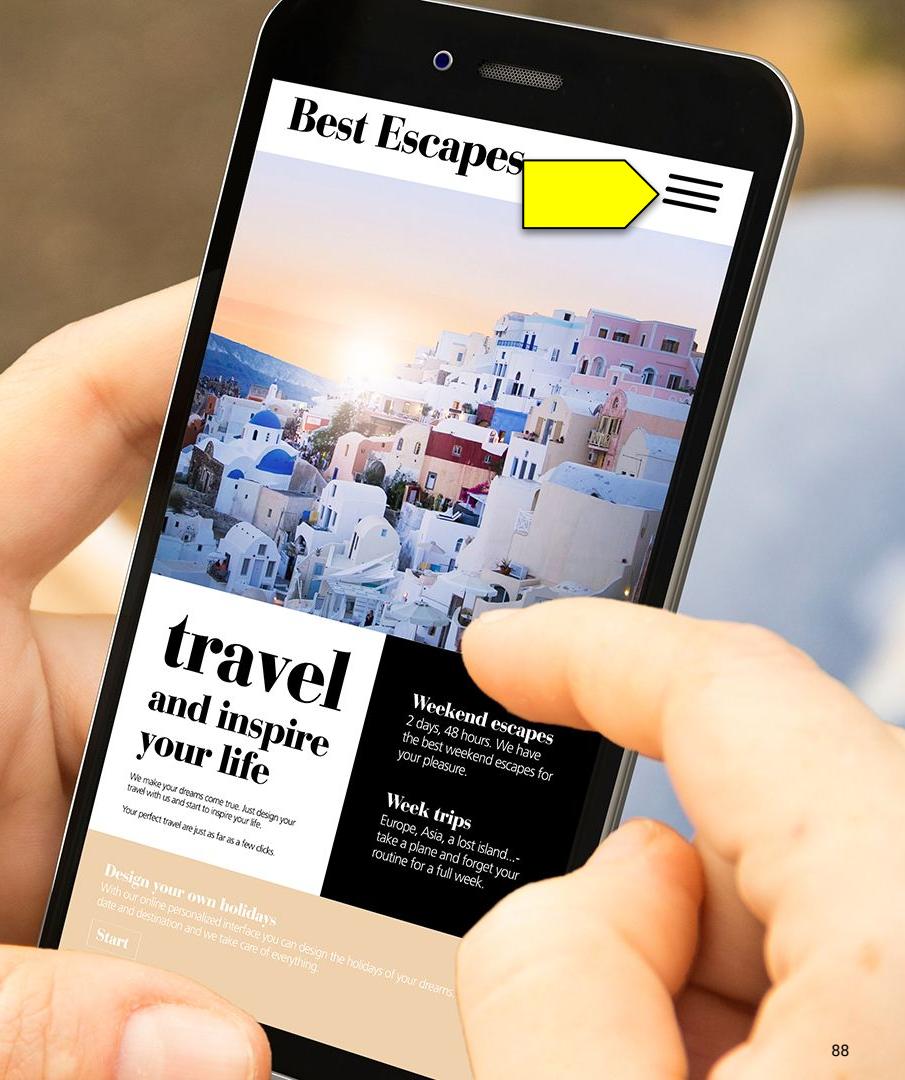


Adventure photography and illustrated paper goods

[HOME](#)[SHOP](#)[BLOG](#)[WANDER](#)[MY PCT HIKE](#)[CONTACT](#)

Bootstrap 4 Navbars

On mobile,
the navbar is a
hamburger
menu.



Bootstrap 4 Navbars

Building a custom navbar into your website is a time-consuming process.
How Bootstrap saves time:

01

Bootstrap 4 is responsive.

You no longer have to create your own breakpoints and styles for these breakpoints—they have already been created. You can control the responsive layout with Bootstrap 4's col class system.

02

Bootstrap has prebuilt functionality.

You don't have to code the interactions for each component. Simply tweak the design of your components and that's it!

03

You can build a complete website.

The developers of Bootstrap have already coded all the components you could ever use and it's based on design trends. Do you need to add cards to your site? Bootstrap has a component just for that purpose.



Instructor Demonstration

Navigation Bars



Activity: Add a Navigation Bar

In this activity, you'll navigate the Bootstrap component documentation page again and then copy and paste the code for the navbar onto your page.

Suggested Time:

10 Minutes

Activity: Add a Navigation Bar

- 01 Open Bootstrap's "[Getting started](#)" documentation.
- 02 Navigate to Bootstrap's "[Navbar](#)" component.
- 03 Copy the code for the first navbar on the list.
- 04 Paste it into your code under line 17.
- 05 Reload the page to see the component for yourself!



Time's Up! Let's Review.

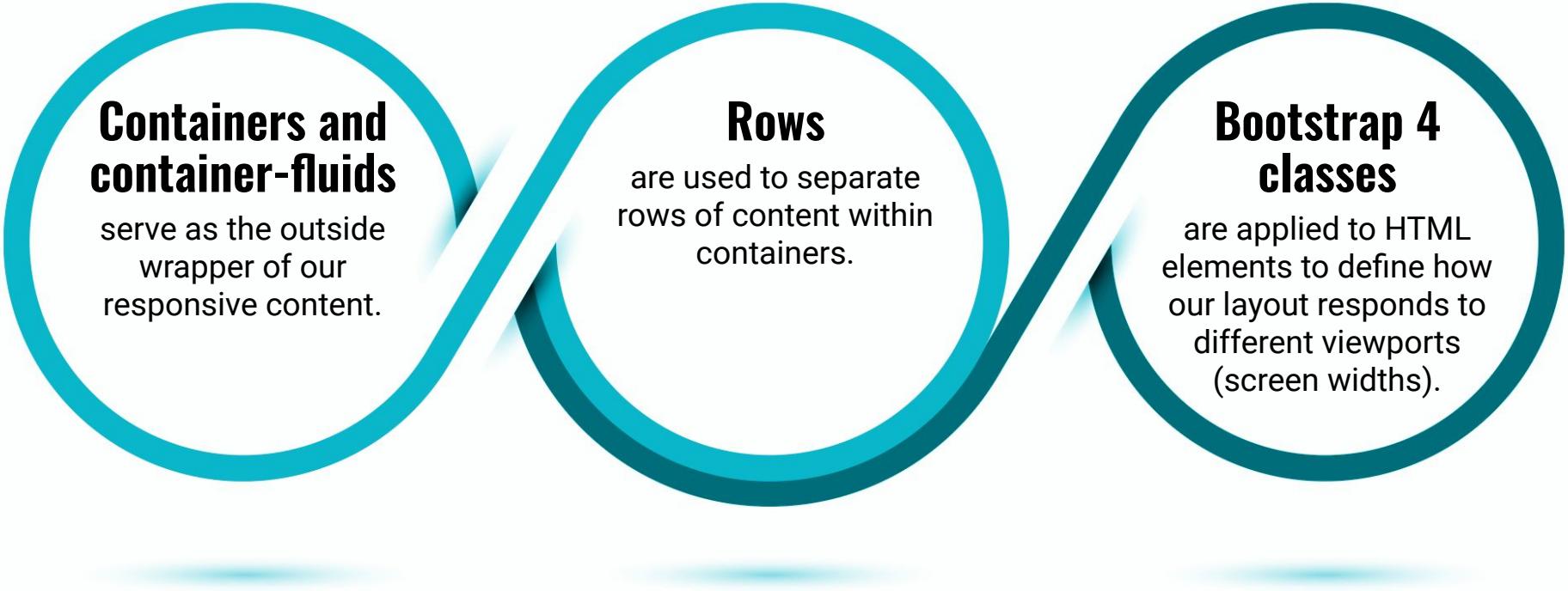


Grid Design With Bootstrap 4

The **responsive column system** (`col` class system) is a series of classes that you can add to any HTML element to make it respond to different viewports based on the classes you write.

Grid Design With Bootstrap 4

The responsive column system has three parts:



Containers and container-fluids

serve as the outside
wrapper of our
responsive content.

Rows

are used to separate
rows of content within
containers.

Bootstrap 4 classes

are applied to HTML
elements to define how
our layout responds to
different viewports
(screen widths).

Prewritten classes are literally HTML classes that are already responsive. All you have to do is apply them to any HTML element wrapped inside a row and a container.



The foundation of this system is made up of the Bootstrap 4 class **container**, **container-fluid**, and **rows**.

Grid Design With Bootstrap 4

The foundation of this system is made up of the Bootstrap 4 class container, container-fluid, and rows. Let's define each element individually:

.container	Containers provide a means to center and horizontally pad your site's contents. Use <code>.container</code> for a container with a fixed width.
.container-fluid	A fluid container has the same function as a regular container except that you use <code>.container-fluid</code> for width: 100% across all viewport and device sizes. This container will always span the full width of the webpage or parent container.
.row	Rows serve as a way to separate content within containers. Rows can display either horizontally or vertically depending on the layout you are trying to achieve.

In Bootstrap 4, All Content Is in Rows and Columns

The screenshot shows a website layout using the Bootstrap 4 grid system. The layout is divided into 12 columns. Column 1 contains the logo 'zocodesign'. Column 7 is labeled 'WORK', column 8 is 'PROCESS', column 10 is 'STUDIO', and column 12 is 'CONTACT'. A 'Save' button is located in column 12. A large teal graphic featuring a stylized figure and geometric shapes occupies the left side of the page. A call-to-action text 'Your business is everything but simple.' is centered in the middle-right area. Below it, a descriptive paragraph reads: 'No stress. ZoCo's expertise in human-centered and strategy-driven design defines and solves even your most complicated challenges.' A vertical sidebar on the far left is labeled 'Layer'.

1 2 3 4 5 6 7 WORK 8 PROCESS 9 10 STUDIO 11 12 CONTACT

zocodesign

Bootstrap Grid Overlay

Your business is everything but simple.

No stress. ZoCo's expertise in human-centered and strategy-driven design defines and solves even your most complicated challenges.



Remember: ALWAYS 12.
The sum total of all Bootstrap 4
classes within a row must add
up to 12 for each breakpoint.

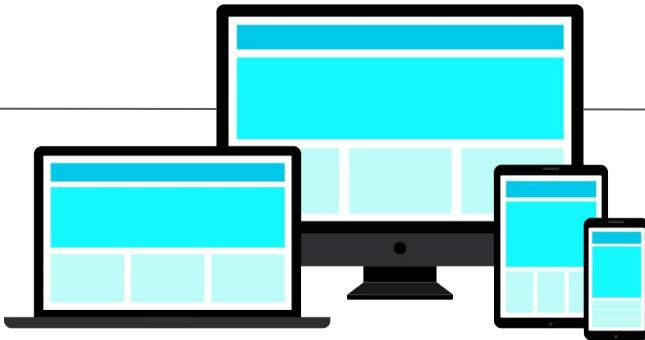
More on this later.

Bootstrap 4 Mobile First Grid: Always 12 Columns

The screenshot shows the Adobe XD interface with a project titled "Bootstrap 4 Grid Template - Phone, Tablet, Desktop". The top menu includes File, Edit, Object, Plugins, View, Window, Help, and a search bar. The left sidebar has tabs for Design, Prototype, and Share, with "Design" selected. A "PLUGINS" section lists "Icons", "Lorem Ipsum", "Overflow", "Pixabay image finder", "UI Faces", and "icondrop". The main canvas displays three responsive grid layouts: "Phone" (1 column), "Tablet" (4 columns), and "Desktop" (12 columns). The right sidebar contains sections for "COMPONENT" (with width W 0, height H 0, and coordinates X 0, Y 0), "RESPONSIVE RESIZE" (disabled), and "APPEARANCE" (with a 0% color slider).

Bootstrap 4 Responsive Screen Sizes

Every Bootstrap 4 grid is made up of 12 columns. Here are the different breakpoints in relation to their classes (media queries).

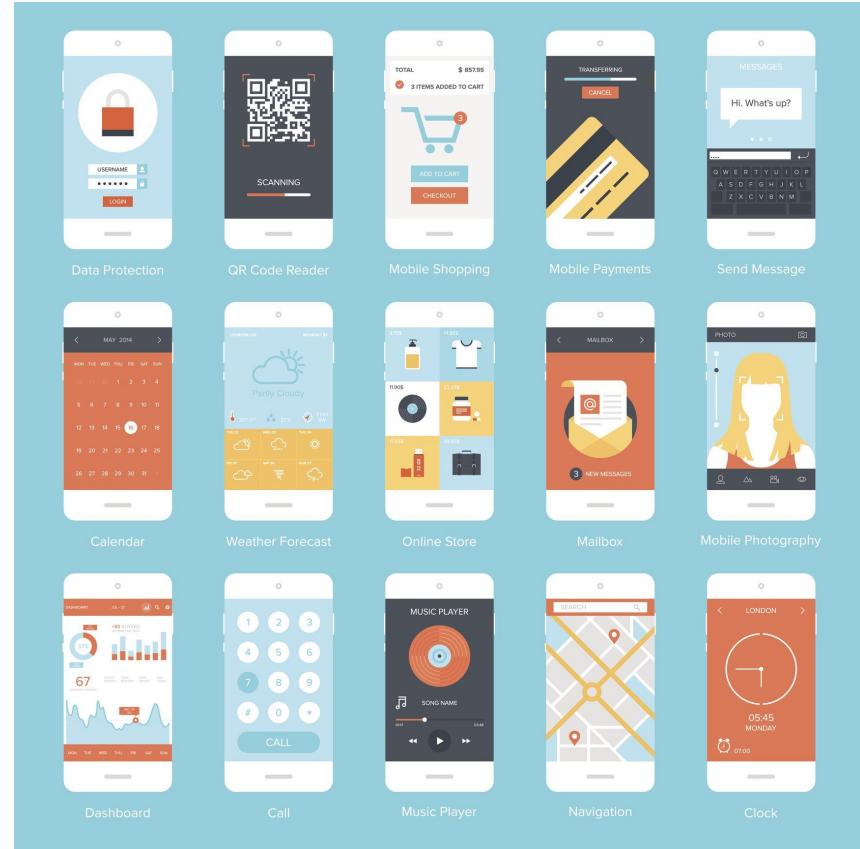


Size	Class	Screen Type	Pixel Width Range (Media Queries)
Extra small	col-xs-	Phone	< 576px
Small	col-sm-	Small tablet	>= 576px
Medium	col-md-	Tablet/small laptop	>= 768px
Large	col-lg-	Laptop	>= 992px
Extra large	col-xl-	Desktop	>= 1,200px
Auto responsive	col-	Any screen size	Will attempt to display the layout you specify, no matter the screen size

Bootstrap 4 Mobile First Grid

Mobile first is a design process that starts with the smallest screen and then expands to larger screens.

The `col` class sets the smallest screen size, and all other screen sizes use the same layout unless specified.



Bootstrap 4 Column Example

Bootstrap's col system must have a container or a container-fluid and a row in order for our Bootstrap columns to respond correctly.
Below is an example of what the proper structure looks like.

```
<div class="container-fluid"><!-- This could also just be a regular container -->
  <div class="row"><!-- Rows are used to separate our columns. If we need multiple rows, we
can always add another. -->
    <div class="col-sm-12 col-md-4 col-lg-4">sample column</div>
    <div class="col-sm-12 col-md-4 col-lg-4">sample column</div>
    <div class="col-sm-12 col-md-4 col-lg-4">sample column</div>
  </div>
</div>
```



Remember: Start with the col-sm first.



Instructor Demonstration

Containers, Rows

Bootstrap 4 12-Column Key Concepts

Bootstrap 4's **12-column grid system** is a series of prewritten CSS classes that define breakpoints for our content.

Bootstrap 4 12-Column Key Concepts

Bootstrap has developed CSS classes that are used to control the layout of HTML elements. Each class targets a specific width (e.g., `col-lg-4` targets large windows). When our website's width (of the browser window) reaches each of these widths, the contents will be rearranged to display differently.

.col-4	.col-4	.col-4
.col-sm-4	.col-sm-4	.col-sm-4
.col-md-4	.col-md-4	.col-md-4
.col-lg-4	.col-lg-4	.col-lg-4
.col-xl-4	.col-xl-4	.col-xl-4
.col-xxl-4		
.col-xxl-4		
.col-xxl-4		

Bootstrap 4 12-Column Key Concepts

Let's take another look at the example where we point out containers and rows:

```
<div class="container-fluid"><!-- This could also just be a regular container -->
  <div class="row"><!-- Rows are used to separate our columns. If we need multiple rows, we
can always add another. -->
    <div class="col-sm-12 col-md-4 col-lg-4">sample column</div>
    <div class="col-sm-12 col-md-4 col-lg-4">sample column</div>
    <div class="col-sm-12 col-md-4 col-lg-4">sample column</div>
  </div>
</div>
```

These classes actually
control your layout.

In the example above, the classes **col-sm-12**, **col-md-4**, and **col-lg-4** define how this row will respond.

The containers and rows are required for structure.

Notice how we're using multiple Bootstrap 4 classes here.

We do this to define our grid layout, which defines breakpoints for our content.

Bootstrap 4 12-Column Key Concepts

Bootstrap's grid system works off a number system (12) that tells the CSS how to display content on your page in a responsive number. Each element is given a class with a number (1–12) that specifies how much space the element takes up on the screen using the `col` classes:

01

Bootstrap 4 classes, columns, and rows can be used on layouts to create fluid layouts quickly without writing media queries ourselves.

02

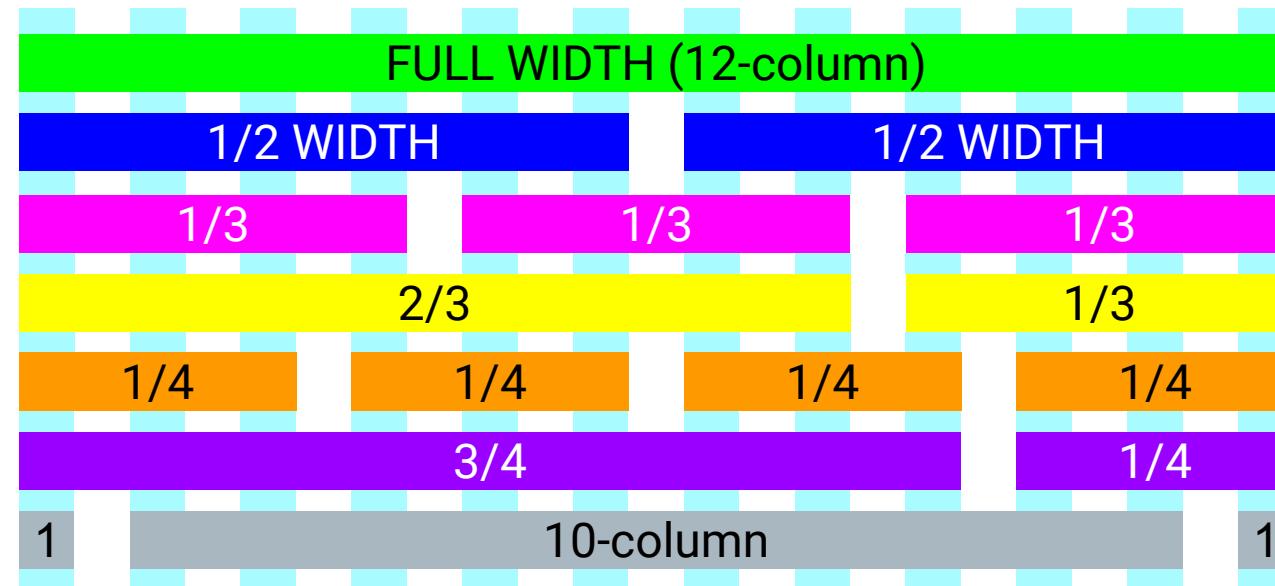
Bootstrap 4's column system allows you to visually see how you have designed breakpoints for specific elements.



When Bootstrap's classes equal 12 inside a container, the children will be fully responsive and span the full container.

Bootstrap 12-Column Grids

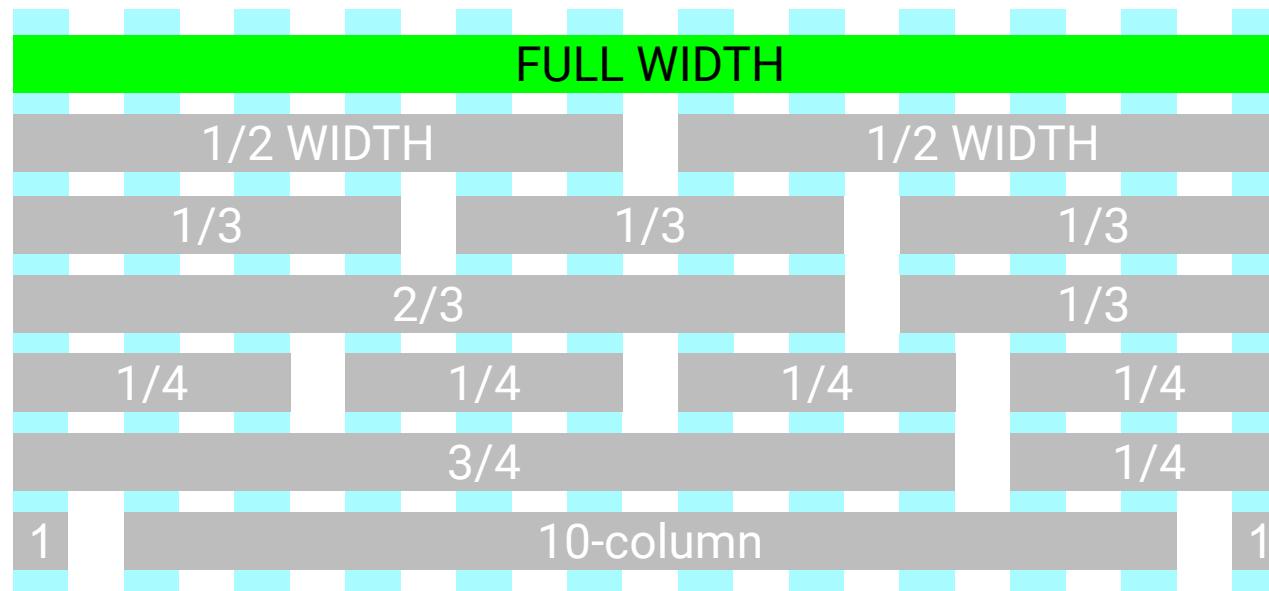
Bootstrap lets you organize content based on the number of columns out of 12 that a `<div>` spans.



Bootstrap Grids Sample

```
<div class="col-xl-12"></div>
```

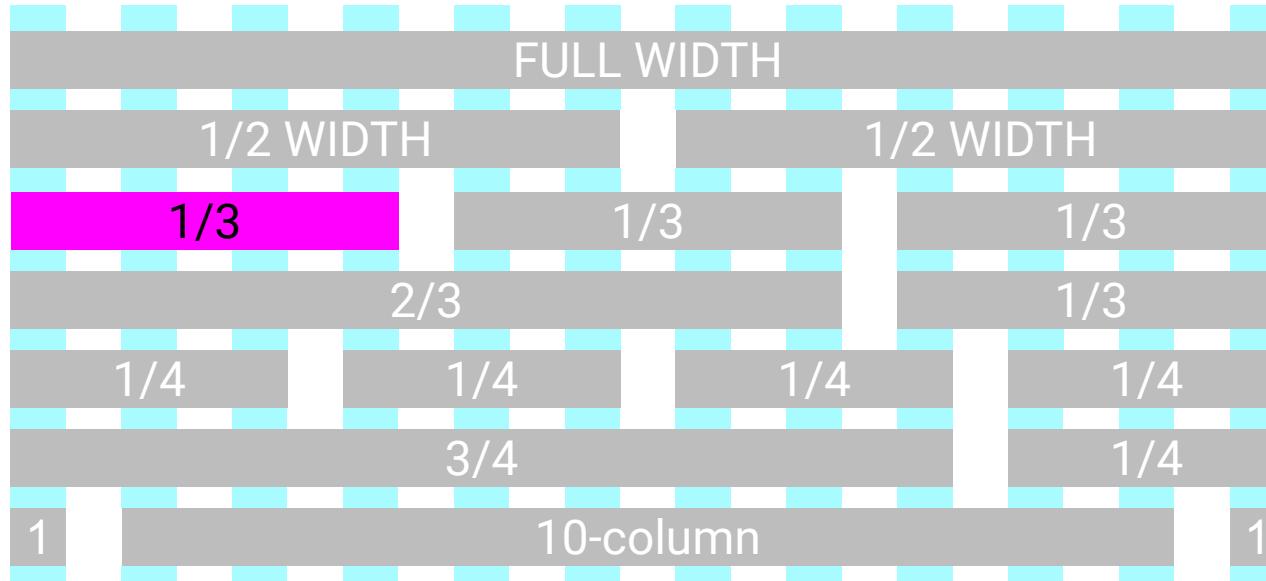
(Spans full-width desktop greater than 140px.)



Bootstrap Grids Sample

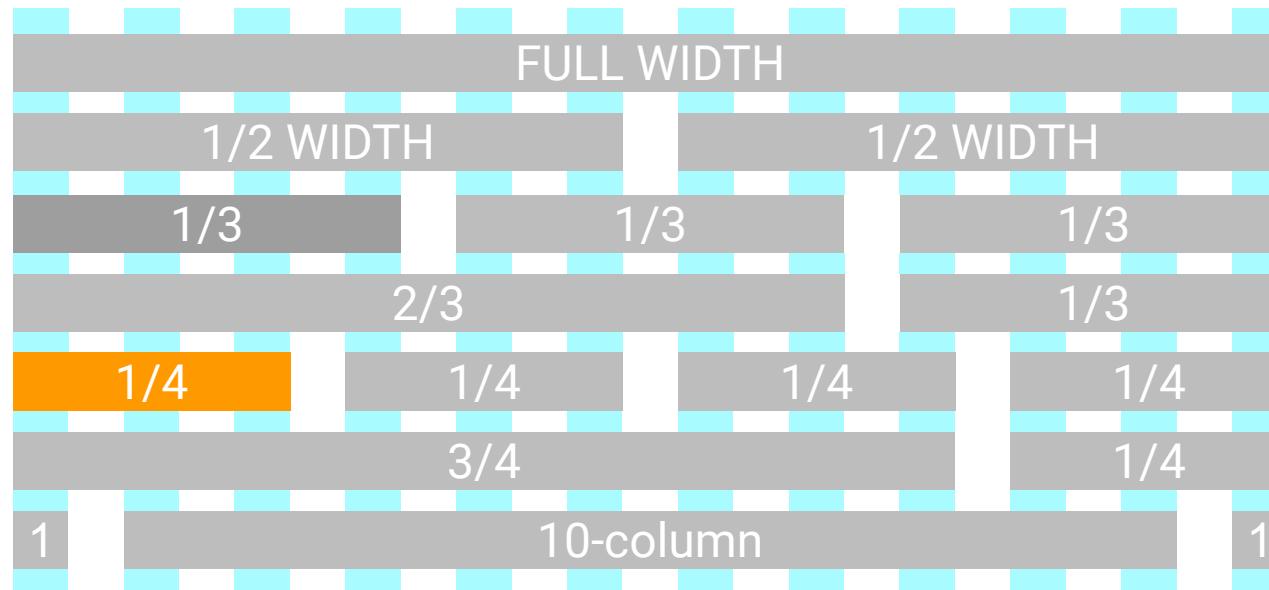
```
<div class="col-xl-4"></div>
<div class="col-xl-4"></div>
<div class="col-xl-4"></div>
```

Each div spans one-third of our container: $4 + 4 + 4 = 12$.

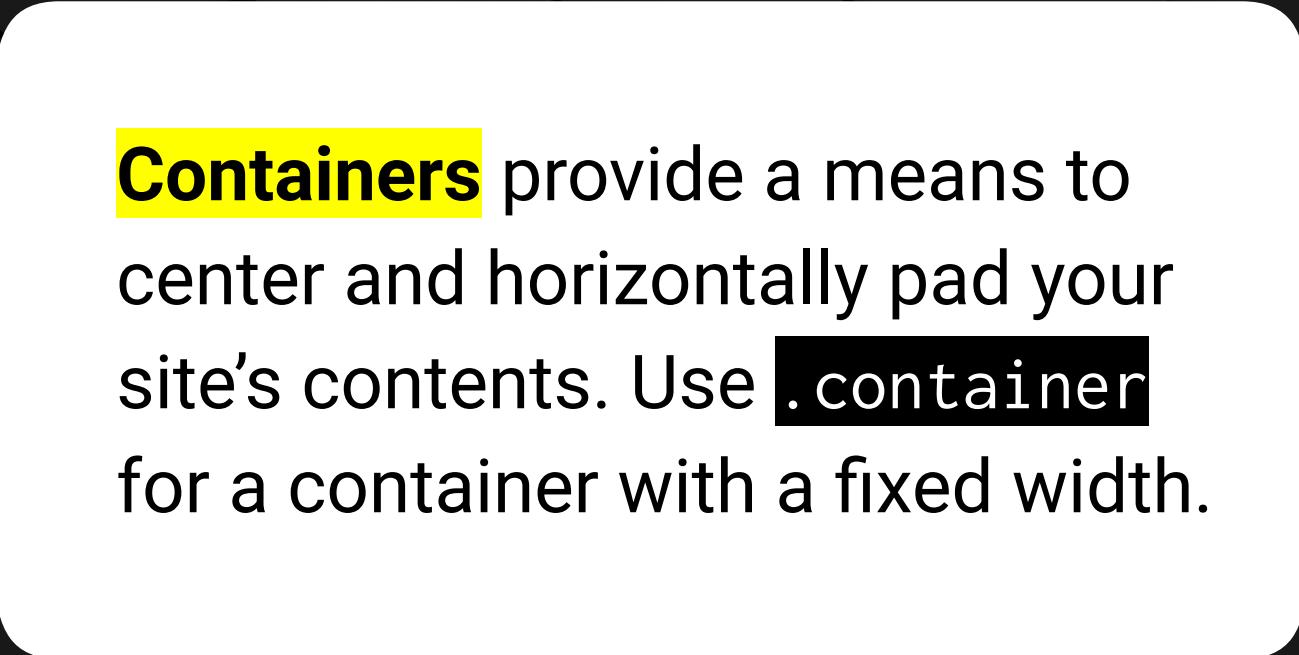


Bootstrap Grids Quiz

`<div class="col-x1-?">` (Spans one-quarter of full width.)



Bootstrap Grid: container



Containers provide a means to center and horizontally pad your site's contents. Use `.container` for a container with a fixed width.

Bootstrap Grid: container

```
<div class="container">
  <div class="row">
    <div class="col-lg-6">sample column</div>
    <div class="col-lg-6">sample column</div>
  </div>
  <div class="row">
    <div class="col-lg-4">sample column</div>
    <div class="col-lg-4">sample column</div>
    <div class="col-lg-4">sample column</div>
  </div>
  <div class="row">
    ...
  </div>
</div>
```

A **fluid container** has the exact same function as a regular container except that you use `.container-fluid` for width: 100% across all viewport and device sizes. This means that this container will always span the full width of the webpage or parent container if present.

Bootstrap 4 Grid: container-fluid

Hello, world!

I love the color yellow.

Purple is my jam!

```
<div class="container-fluid">
  <h1>Hello World!</h1>
  <div class="row">
    <div class="col-sm-12" style="background-color:yellow;">
      <p>I love the color yellow</p>
    </div>
    <div class="col-sm-12" style="background-color:violet;">
      <p>Purple is my jam!</p>
    </div>
  </div>
```

Rows are wrappers for columns. Each column has horizontal padding (called a gutter) for controlling the space between columns. This padding is then counteracted on the rows with negative margins. This way, all the content in your columns is visually aligned down the left side.

Total Number of Rows: Four

	Wireframes	Home	About	Contact
1	Awesome Photos			
1***				
1***				
1				

The wireframe diagram illustrates a layout with four rows. Row 1 contains navigation links: Wireframes, Home, About, and Contact. Row 2 is labeled 'Awesome Photos' and contains a large central image placeholder and two smaller image placeholders. Row 3 is labeled '1***' and contains a large image placeholder. Row 4 is labeled '1***' and contains a text area with placeholder text and a 'Click to view photo' button. Row 5 is labeled '1' and contains a GitHub logo.

Wireframes

Home

About

Contact

Awesome Photos

1***

1***

1

1

Click to view photo

1



Bootstrap Grid: row

Containers and container-fluids must have a row inside them for you to be able to use Bootstrap classes on your HTML elements.

This step may seem minimal, but using Bootstrap's columns and rows are fundamental to understanding how to build layouts with Bootstrap 4.

```
<div class="container-fluid">
  <div class="row"><!-- This row is going to separate our content -->
  </div>
  <div class="row"> <!-- This row is going to separate our content -->
  </div>
</div>
```



Instructor Demonstration

Bootstrap's Col Class

Bootstrap 4 Grid: Important!

Bootstrap 4 classes can only be applied to an element inside a row, which is wrapped inside a `container` or `container-fluid`.

```
<div class="container-fluid">
  <div class="row">
    <div class="cardContainer col-lg-3 col-md-3 col-sm-12"></div>
    <div class="cardContainer col-lg-3 col-md-3 col-sm-12"></div>
    <div class="cardContainer col-lg-3 col-md-3 col-sm-12"></div>
    <div class="cardContainer col-lg-3 col-md-3 col-sm-12"></div>
  </div>
</div>
```



Questions?



*The
End*